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SPACECRAFT OPTICAL AND THERMAL MODEL

R. S. Hallstein

Rockwell International Corporation

Prepared for:

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steady state temperatures will be similar to transient temperature. However, during eclipse periods, temperature excursions are large and transient data is significant.

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SPACECRAFT OPTICAL & THERMAL MODEL

R. S. Hallstein

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INTRODUCTION

The purpose of this final report is to document all technical work accomplished and information gained in performance of contract F30602-74C-0113. It should be noted that a recent contract modification reducing the scope of activity has resulted in a less voluminous report because several tasks, discussed later, have been deleted.

This contract required three deliverable items:

1. 1/10 scale model of P72-2 with attached payloads RM-20A and RM-20B.
2. Thermal signature analysis of P72-2 and attached payloads.
3. Final report.

Item 1 (the model) and documentation was delivered to LMSC May 2, 1974 and will be the first topic of discussion in this report.

Item 2, modified as required because of contract reduction in scope, is the second part of this final report.

Item 3 is composed of this document and appendices in their entirety.

SUMMARY

The 1/10 scale model was fabricated primarily from wood with adhesive application of surface covering materials identical to those applied to the full scale spacecraft. Actual solar cells were also installed on the model in order to accurately reproduce their unique spectral reflectance characteristics. This was also the case for mirror reflectors.

No major problems were encountered and the technical adequacy of the model is acceptable according to Lockheed Missile & Space Co. where the model was used.

The thermal model, developed to predict spacecraft and payload surface temperatures in orbit was never fully exercised because of a reduction in scope of the contractual activity. No major problems were encountered and the computer model is presently updated and complete to provide surface S/C temperatures including payload effects.

Indications are that in general sun lit orbit steady state temperatures (average temperature during an orbit) will be similar to transient surface temperatures. However, during eclipse periods, temperature excursions are large and transient temperature data is significant.

MODEL DESCRIPTION

The model is a wooden mock-up 1/10 scale of the P72-2 spacecraft surface including the RM-20B radiator and the RM-20A experiment in deployed position but capable of articulation, by hand, around three orthogonally located axes (stowed position is excluded).

Model construction design considered the factors of a 10 inch object surface telescope resolution and its affect on required detail including "glint", checkerboard patterns, first versus second surface mirrors and solar cell and cover glass surface simulation.

As a result, all large flat area mirror mosaics are simulated by full size S/C mirrors trimmed as required to maintain accurate model geometry, and solar cell surfaces are covered with actual S/C solar cell elements. Certain tubular structures (open network areas) are easier to simulate by the plane surface which they define. However, shadowing imagery would be inaccurate and therefore such structures were duplicated as the open pattern structural members, scaled as required to maintain structural integrity.

Tapped hole mountings positioned as requested by LMSC and located such that they do not interfere with star light shadowing or visual observation were provided including a model mounting fixture bar. In addition, adhesive backed cover disks of appropriate material were supplied for application over unused mounting holes, thus providing apparent surface continuity.

As a result of the considerations listed above, the model was fabricated using the same surface materials used in the actual spacecraft and associated payloads. In areas of two color stripes or checkerboard patterns, the total area ratio of each color was maintained. Thus integrated reflectivity values

are correctly duplicated. In several instances, a covering material substitution was made by applying a thinner sheet of material. However, the reflective coating is the same and therefore the reflective signature is unchanged.

Appendix A tabulates the reflective surface materials used and their characteristics. Sequential pages identify where each material is applied and presents solar cell reflectance characteristics as well as requirements placed on LMSC for mirror element supply and installation.

The model was inspected at Rockwell International Space Division May 1, 1974 and hand carried to LMSC May 2, 1974. (Several surface mirror elements previously supplied and installed by LMSC personnel had developed black specks and these were replaced by LMSC after model delivery to their facility.)

Additional information supplied after model delivery included a prediction of sun angle dynamics, necessary to enable LMSC to illuminate and photograph the S/C with typical angular orientation conditions encountered during orbital use. (This data is documented in Appendix B.) Also included was orbit trace data for a typical operational situation over selected ground stations (see Appendix C).

Since no formal drawings were generated or required, a RADC request of several drawings adequate to permit determination of external dimensions of the S/C was satisfied by supplying full scale S/C drawings.

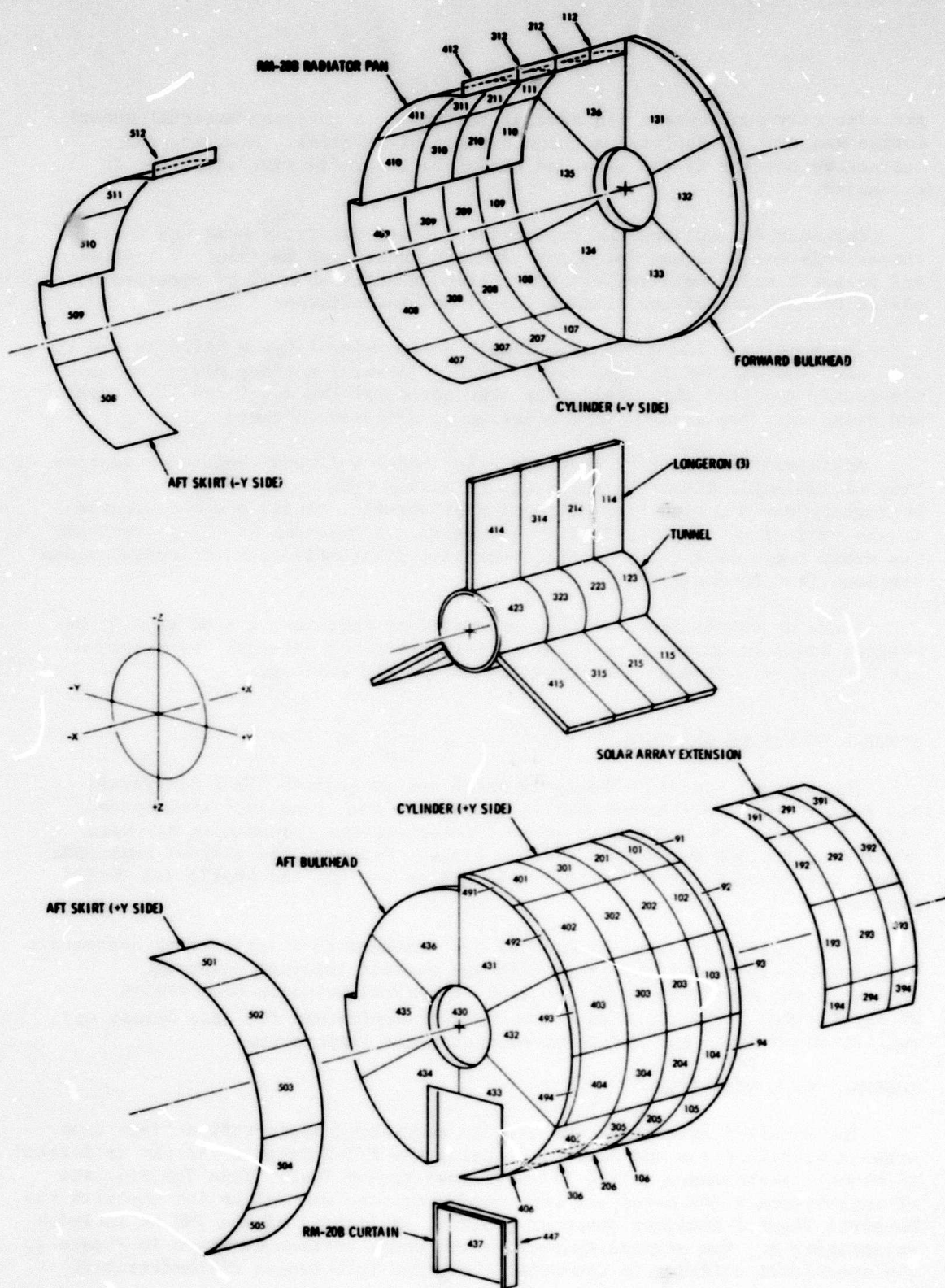
THERMAL SIGNATURE ANALYSIS

The thermal signature analysis which was to include P72-2 Spacecraft and Payload surface temperatures (steady state and transient) at selected times in orbit, was reduced in scope eliminating the requirement for data covered in the SOW paragraphs 4.2.1 - 4.2.4. However, the thermal math model (TMM), was updated, as required by the SOW to include the RM-20A and RM-20B payloads.

A preliminary thermal prediction run designed to predict P72-2 spacecraft temperatures in a sunlight orbit with and without internal power was generated and submitted to Dr. J. Bick of General Research Corporation on May 1, 1974. This data was to be used predominately for data format and indication of S/C power influence on spacecraft temperatures.

THERMAL MODEL DESCRIPTION

The detailed spacecraft TMM used in generating spacecraft surface temperature distributions was developed during the P72-2 program and was calibrated to vehicle performance at the IST-3 Thermal Vacuum Test. This TMM consists of approximately 400 nodes and 2000 conductors and was set up for use with the Rockwell Thermal Analyzer computer program. A listing of the TMM is included as Appendix D. The general Spacecraft TMM nodal pattern is shown in Figure 1. The spacecraft cylinder is essentially divided into twelve circumferential



parts (30° segments) and various lengths axially. The bulkheads are divided into 60° pie-shaped segments as shown. Figures 2 and 3 depict the thermal structural networks for the cylinder, bulkheads and the longerons. The longerons consist of a triad of aluminum honeycomb equipment shelves which radially tie the spacecraft center cylinder (14 in. diameter) to the circumferential skins at 120 degree intervals.

The TMM/Thermal Analyzer computer program accommodates the following input data:

1. Surface Thermophysical and Radiative Properties

Mass, specific heat, surface area, solar absorptivity and infrared emissivity are applied to each spacecraft and payload surface node. Table 1 is a table which summarizes the important external spacecraft and payload surfaces. Shown are, TMM node number, identification, surface area, solar absorptivity (α), infrared emissivity (ϵ), and two angles (ϕ, β) which describe the surface orientation with respect to the spacecraft coordinate system. The external spacecraft coatings consist mainly of S13G white paint and solar reflective teflon coated aluminum and silver tapes.

2. Internal Heat Generation and Heat Transfer

Each internally mounted spacecraft or payload electronic box is represented by one to 15 nodes. Heat generation is applied in the form of curve lookup as a function of time. The TMM listing, Appendix E, represents a quiescent power profile which is representative during a majority of the on-orbit operation time. The external surface temperatures are more dependent upon the orbital environment.

The five pair of circumferential isothermalizer heat pipes, which distribute absorbed solar heat around the spacecraft skin, are included on an individual basis into the TMM.

The major mode of heat transfer is conduction through the aluminum structure. Internal radiation was included between the longerons, bulkheads and vehicle skin.

3. P72-2 Environmental Heating

The orbital parameters of the P72-2 mission, including launch data, altitude, inclination, degrees west longitude from the dusk terminator, etc., are used by the computer program as ephemeris data. Environmental heat loads, including direct solar, earth emission, and earth reflected solar (albedo) heat loads incident upon the spacecraft, are computed with the use of the Rockwell Space Vehicle Thermal Environment Program. Each major surface node has its own curve lookup (function of time in orbit depending on surface orientation. (Shadowing has been accounted for where appropriate.)

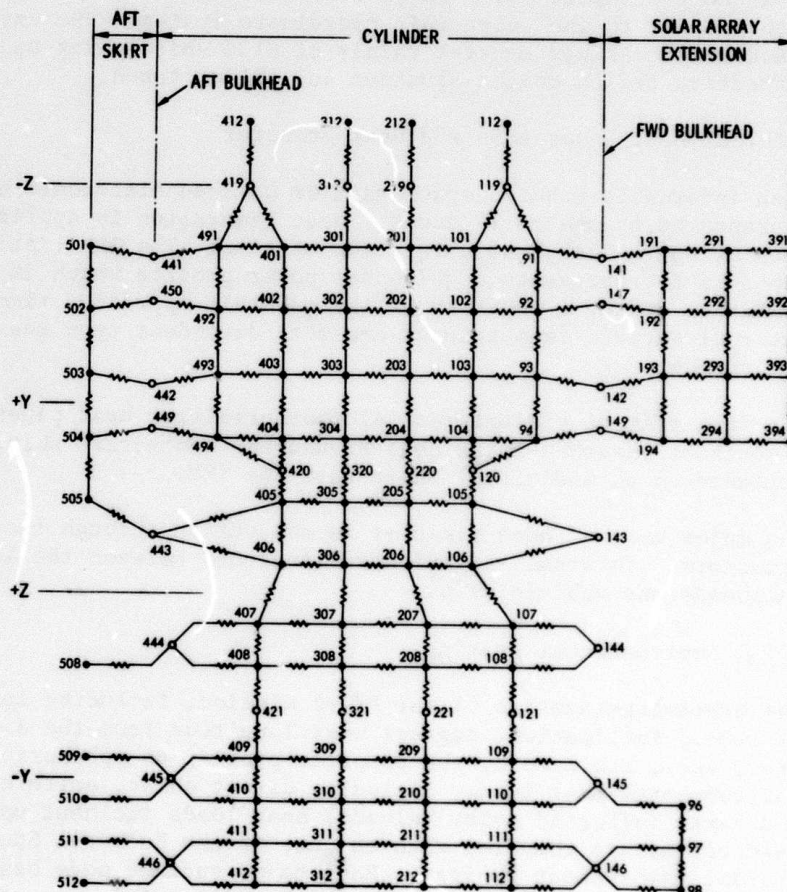
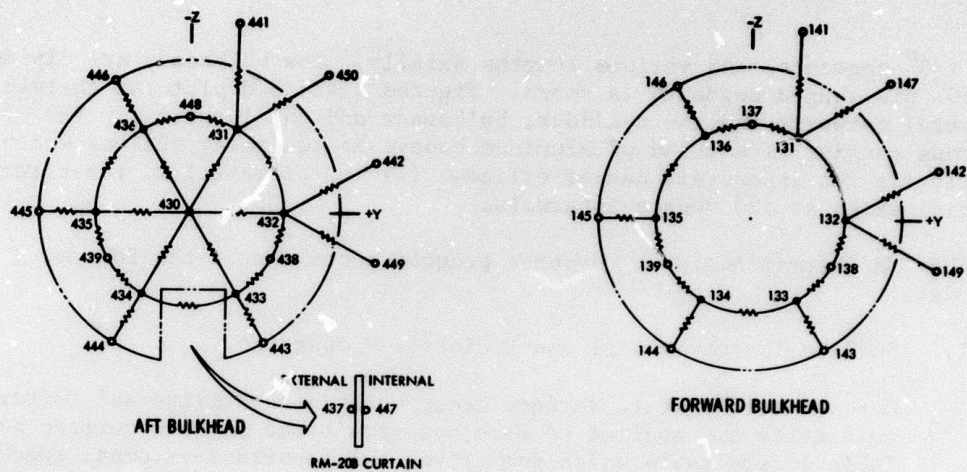
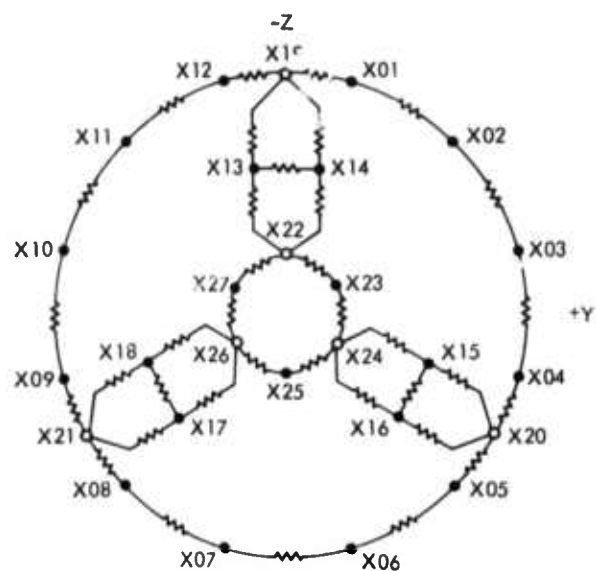


Figure 2. P72-2 Spacecraft TMM Structural Network for Spacecraft Cylinder and Bulkheads



CROSS SECTION THRU CYLINDER

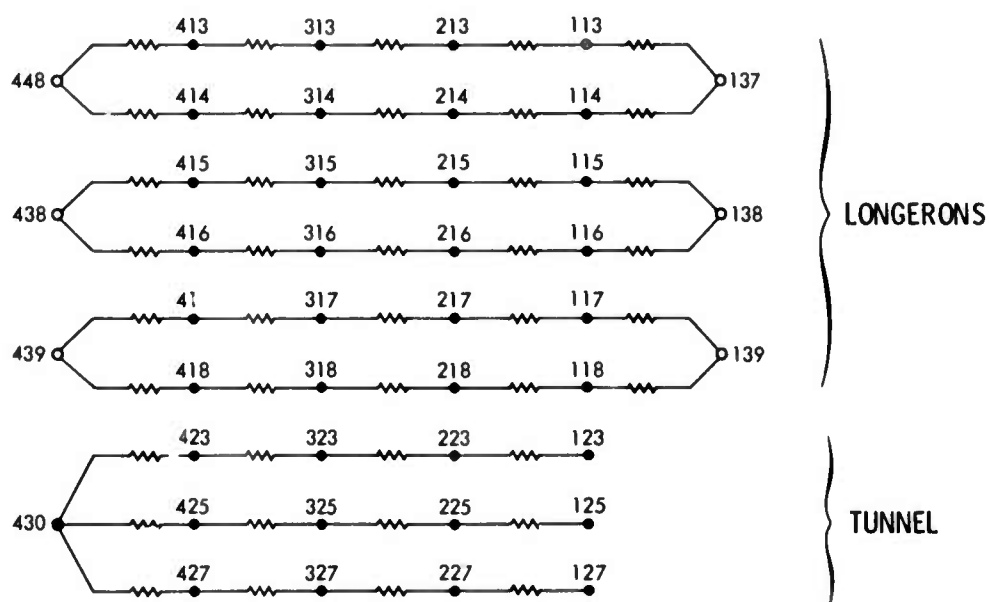


Figure 3 . P72-2 Spacecraft TMM Structural Network for Longerons and Tunnel

Table 1
Spacecraft and Payload Surface Description

TMM Node No.	Surface Description	Surface Area ft ²	*Thermal Radiative Properties α/ϵ	**Vehicle Orientation ϕ, β
91	Solar Array-Fwd Bkd Interface	.45	.61/.75	90,105
92	Solar Array-Fwd Bkd Interface	.45	.61/.75	90,135
93	Solar Array-Fwd Bkd Interface	.45	.61/.75	90,165
94	Solar Array-Fwd Bkd Interface	.45	.61/.75	90,195
101	Solar Array	0.65	.82/.79	90,105
102	Solar Array	0.65	.82/.79	90,135
103	Solar Array	0.65	.82/.79	90,165
104	Solar Array/+Y Access Panel	0.65	.45/.79	90,195
105	+Y Access Panel	1.1	.08/.78	90,225
106	Ground Plane	1.1	.20/.86	90,255
107	Ground Plane	1.1	.20/.86	90,285
108	Ground Plane	1.1	.20/.86	90,315
109	-Y Access Panel	1.1	.20/.86	90,345
191	Solar Array Extension-Fwd	.5	.82/.79	90,105
192	Solar Array Extension-Fwd	.6	.82/.79	90,135
193	Solar Array Extension-Fwd	.6	.82/.79	90,165
194	Solar Array Extension-Fwd	.3	.82/.79	90,187.5
201	Solar Array	0.8	.82/.79	90,105
202	Solar Array	0.8	.82/.79	90,135
203	Solar Array	0.8	.82/.79	90,165
204	Solar Array/+Y Access Panel	0.8	.45/.79	90,195
205	+Y Access Panel	0.8	.08/.78	90,225
206	Ground Plane	0.8	.20/.86	90,255
207	Ground Plane	0.8	.20/.86	90,285
208	Ground Plane	0.8	.20/.86	90,315
209	-Y Access Panel	0.85	.20/.86	90,345
291	Solar Array Extension-Fwd	1.0	.82/.79	90,105
292	Solar Array Extension-Fwd	1.2	.82/.79	90,135
293	Solar Array Extension-Fwd	1.2	.82/.79	90,165
294	Solar Array Extension-Fwd	0.6	.82/.79	90,187.5
301	Solar Array	0.86	.74/.79	90,105
302	Solar Array	0.86	.74/.79	90,135
303	Solar Array	0.86	.74/.79	90,165
304	Solar Array/+Y Access Panel	0.86	.41/.79	90,195
305	+Y Access Panel	0.86	.08/.78	90,225
306	Ground Plane	0.86	.20/.86	90,255
307	Ground Plane	0.86	.20/.86	90,285
308	Ground Plane	0.86	.20/.86	90,315
309	-Y Access Panel	0.94	.20/.86	90,345
391	Solar Array Extension	0.5	.82/.79	90,105
392	Solar Array Extension	0.6	.82/.79	90,135
393	Solar Array Extension	0.6	.82/.79	90,165
394	Solar Array Extension	0.3	.82/.79	90,187.5

TMM Node No.	Surface Description	Surface Area ft ²	*Thermal Radiative Properties α/ϵ	**Vehicle Orientation ϕ, β
401	Solar Array	1.2	.74/.79	90,105
402	Solar Array	1.2	.74/.79	90,135
403	Solar Array	1.2	.74/.79	90,165
404	Solar Array/+Y Access Panel	1.2	.41/.79	90,195
405	+Y Access Panel	1.3	.08/.78	90,225
406	Ground Plane	1.3	.20/.86	90,255
407	Ground Plane	1.3	.20/.86	90,285
408	Ground Plane	1.3	.20/.86	90,315
409	-Y Access Panel	1.4	.20/.86	90,345
430	Aft Bkd Center Ring	1.0	.15/.03	180,0
431	Aft Bkd +Y	1.6	.20/.86	180,0
432	Aft Bkd +Y	2.4	.20/.86	180,0
433	Aft Bkd +Z	1.25	.14/.25	180,0
434	Aft Bkd +Z	1.8	.14/.25	180,0
435	Aft Bkd -Y	2.1	.14/.25	180,0
436	Aft Bkd -Y	1.0	.14/.25	180,0
437	Aft Bkd - RM20B Closeout	1.65	.20/.86	180,0
491	Solar Array-Aft Bkd Interface	.15	.69/.75	90,105
492	Solar Array-Aft Bkd Interface	.15	.69/.75	90,135
493	Solar Array-Aft Bkd Interface	.15	.69/.75	90,165
494	Solar Array-Aft Bkd Interface	.15	.69/.75	90,195
501	Solar Array-Aft Skt Extension	1.4	.82/.79	90,105
502	Solar Array-Aft Skt Extension	1.4	.82/.79	90,135
503	Solar Array-Aft Skt Extension	1.4	.82/.79	90,165
504	Solar Array/Aft Skirt	1.4	.45/.79	90,195
505	Aft Skirt	1.5	.08/.79	90,225
508	Aft Skirt	1.5	.13/.47	90,315
509	Aft Skirt	1.6	.13/.47	90,345
501-509	Inside Facing Surfaces	See above	.20/.86	-
740	Fwd Bkd Insulation Center	1.1	.15/.78	0,0
741	Fwd Bkd Insulation +Y	2.6	.15/.78	0,0
742	Fwd Bkd Insulation +Y	2.6	.15/.78	0,0
743	Fwd Bkd Insulation +Z	2.6	.15/.78	0,0
744	Fwd Bkd Insulation +Z	2.6	.15/.78	0,0
745	Fwd Bkd Insulation -Y	0.7	.15/.78	0,0
832	RM20B Scan Mirror Housing Ins	0.4	.08/.78	100,0
833	RM20B Scan Mirror Housing Ins	0.6	.08/.78	190,10
834	RM20B Scan Mirror Housing Ins	0.5	.08/.78	90,170
835	RM20B Scan Mirror Housing Ins	0.6	.08/.78	10,10
836-843	RM20B Telescope Housing Cylinder ~10 In. Dia.		.08/.78	NA
	Insulation Even ID's Face Spacecraft			
836-843	RM20B Telescope Housing Cylinder ~10 In. Dia.		.08/.78	NA
	Insulation Odd ID's Face Spacecraft			
844	RM20B Pitch Motor Insul.	0.6	.08/.78	90,180
849	RM20B Signal Conditioner Ins.	0.5	.08/.78	90,0
850	RM20B Signal Conditioner Ins.	0.3	.08/.78	0,190
851	RM20B Signal Conditioner Ins.	0.3	.08/.78	0,190

TMM Node No.	Surface Description	Surface Area ft ²	*Thermal Radiative Properties α/ϵ	**Vehicle Orientation ϕ, θ
852	RM20B Signal Conditioner Ins.	0.3	.08/.78	0,260
853	RM20B Signal Conditioner Ins.	0.3	.08/.78	0,10
854	RM20B Signal Conditioner Ins.	0.3	.08/.78	0,10
855	RM20B Signal Conditioner Ins.	0.3	.08/.78	0,100
857	RM20B Signal Conditioner Ins.	0.5	.08/.78	90,180
886	RM20B Yoke Insulation	0.6	.08/.78	90,180
887	RM20B Yoke Insulation	0.6	.08/.78	90,0
888	RM20B Yoke Insulation	0.6	.08/.78	90,180
889	RM20B Yoke Insulation	0.6	.08/.78	90,0
1001	RM20B Radiator Sun Shield	0.5	.20/.86	90,180
1002	RM20B Radiator Sun Shield	0.4	.20/.86	90,180
1003	RM20B Radiator Sun Shield	0.4	.20/.86	90,180
1004	RM20B Radiator Sun Shield	0.5	.20/.86	90,180
1005	RM20B Radiator Sun Shield	0.8	.20/.86	90,180
1006	RM20B Radiator Sun Shield	0.6	.20/.86	90,180
1011	RM20B Radiator Earth Shield	0.7	.20/.86	90,270
1012	RM20B Radiator Earth Shield	0.7	.20/.86	90,270
1013	RM20B Radiator Earth Shield	0.7	.20/.86	90,270
1014	RM20B Radiator Earth Shield	0.7	.20/.86	90,270
1015	RM20B Radiator Earth Shield	1.1	.20/.86	90,270
1016	RM20B Radiator Earth Shield	1.3	.20/.86	90,270
2001	RM20A Optical Assembly (2 parts)	3.6	.07/.80	0,37.1(83)
2002	RM20A Optical Assembly	2.5	.07/.80	0,127
2003	RM20A Optical Assembly	1.1	.07/.80	0,217
2004	RM20A Optical Assembly	1.7	.07/.80	90,0
2005	RM20A Optical Assembly	1.7	.07/.80	90,180
2006	RM20A Sun Shade	2.6	.07/.80	0,37.1
2007	RM20A Sun Shade	2.6	.07/.80	0,205
2008	RM20A Sun Shade	2.0	.07/.80	90,0
2009	RM20A Sun Shade	2.0	.07/.80	90,180
2011	RM20A Scan Mirror Drive	0.6	.35/.80	NA
2012	RM20A Electronics	0.6	.35/.80	NA
2013	RM20A Signal Processing Unit	0.5	.15/.05	0,127.1
2014	RM20A Signal Processing Unit	0.7	.15/	0,217.1
2015	RM20A Signal Processing Unit	0.6	.22/	90,180
2016	RM20A Signal Processing Unit	0.6	.15/	90,0
2017	RM20A Signal Processing Unit	2.2	.16/	0,307.1
2018	RM20A Azimuth Column	2.9	.30/	NA
2019	RM20A Azimuth Momentum Wheel	0.6	.15/	NA
2020	RM20A Servo Motor (Bottom)	1.1	.10/	0,250
2021	RM20A Servo Motor	1.0	.15/	NA
2022	RM20A Radiator Support Arm	3.3	.17/	NA
2023	RM20A Radiator (Insul. Side)	12.5	.17/	90,220
2031	RM20A Support Structure Insul.	0.9	.13	102,90
2032	RM20A Support Structure Insul.	0.8	.13	102,90
2033	RM20A Support Structure Insul.	0.5	.13	102,90

TMM Node No.	Surface Description	Surface Area ft ²	*Thermal Radiative Properties α/ϵ	**Vehicle Orientation ϕ, β
2037	RM20A Support Structure Insul.	1.0	.13	105,295
2038	RM20A Support Structure Insul.	1.6	.13	105,295
2039	RM20A Support Structure Insul.	0.6	.13	101,222
2040	RM20A Support Structure Insul.	0.4	.13	101,222
2041	RM20A Support Structure Insul.	2.2	.13	101,222

* α defined as percent of incident solar energy absorbed by surface
 ϵ defined as total hemispherical emissivity

** Vehicle orientation ϕ, β are two rotations in vehicle coordinate system, referenced from +X and -Y axes, which define surface orientation; i.e., Fwd Bulkhead $\phi = 0^\circ, \beta = 0^\circ$, +Y axis $\phi = 90^\circ, \beta = 180^\circ$.

THERMAL MATH MODEL UPDATE

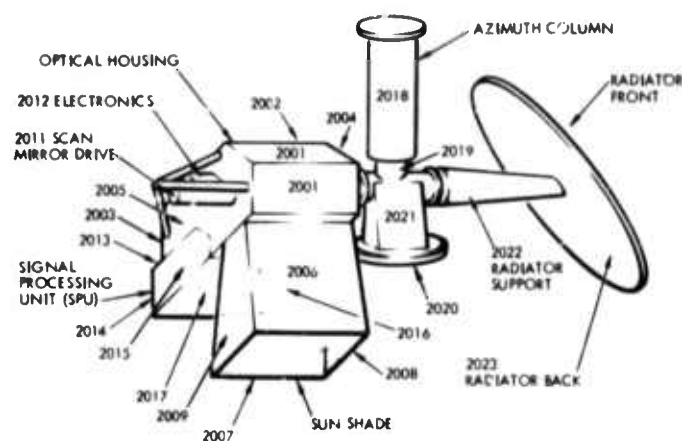
As required per the SOW, the Thermal Math Model was updated to include major RM-20A and RM-20B surfaces. Figures 4 and 5 show the nodal patterns for the payload TMM's respectively. A listing of these nodes including surface area, thermal radiative properties (α, ϵ) and surface orientation with respect to the spacecraft coordinate system, is included in Table 1.

RM-20A nodes accounted for in the TMM include major sensor and sunshade surfaces, the radiator, and support structure insulation surfaces. Internal conduction paths are not accounted for as these surfaces are primarily dependent on environmental heating and radiation to the spacecraft and space. The TMM listing, Appendix D, includes the RM-20A surfaces (conductor ID's 7XXX-8XXX and node no's 20XX).

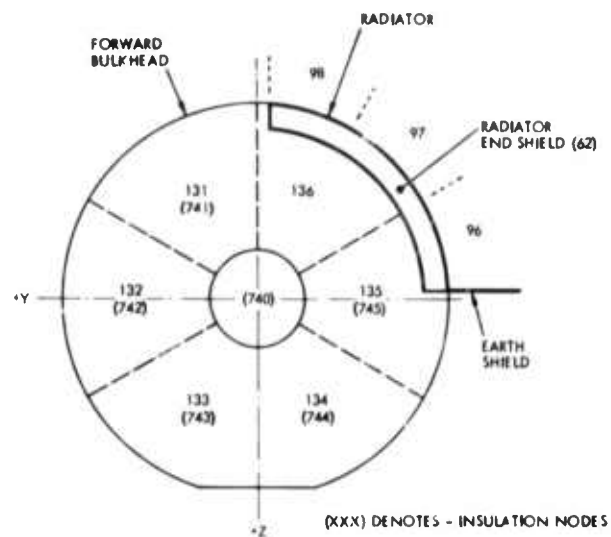
RM-20B nodes accounted for in the TMM include the sensor and the radiator sun and earth shields. Radiation interchange between the RM-20B sensor surfaces and the spacecraft bulkhead and skirt was included. A special radiosity network was developed for use with the General Thermal Analyzer to account for reflected solar energy (assumed diffusely reflected) in this aft bulkhead cavity area. Results showed that surfaces which are shadowed from direct solar radiation absorb some solar energy reflected from other surfaces. The TMM listing, Appendix D, includes the RM-20B surfaces (conductor ID's 4XXX and node no's. 8XX).

THERMAL MATH MODEL STATUS

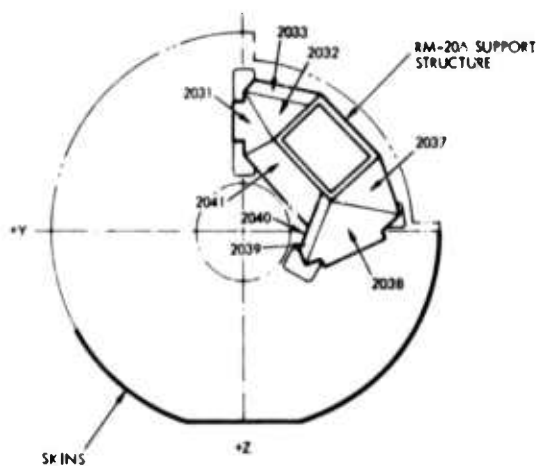
The TMM which is listed in Appendix D, when combined with the Rockwell General Thermal Analyzer Computer program is designed to produce detailed P72-2 Spacecraft and Payload surface temperature predictions as a function of launch date, orbit parameters and time in orbit (both steady state and transient values can be generated).



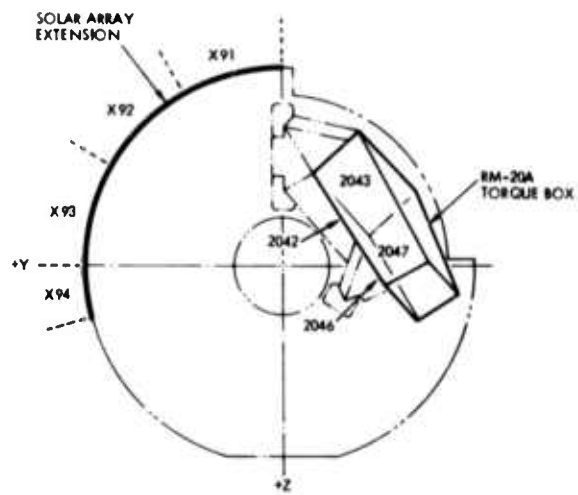
RM-20A SENSOR



FORWARD BULKHEAD & RM-20B RADIATOR

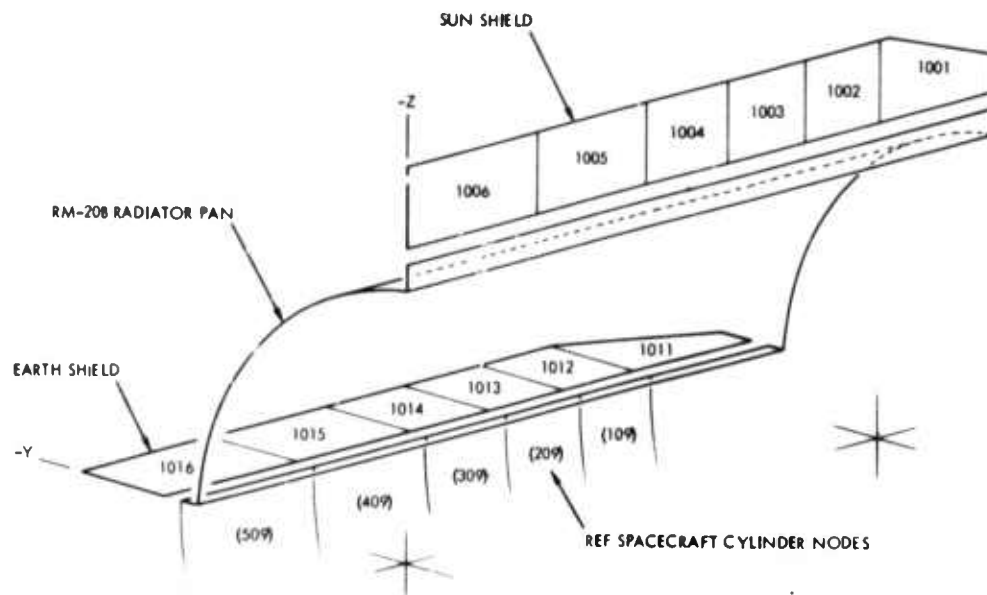


RM-20A ALUMINUM SUPPORT STRUCTURE

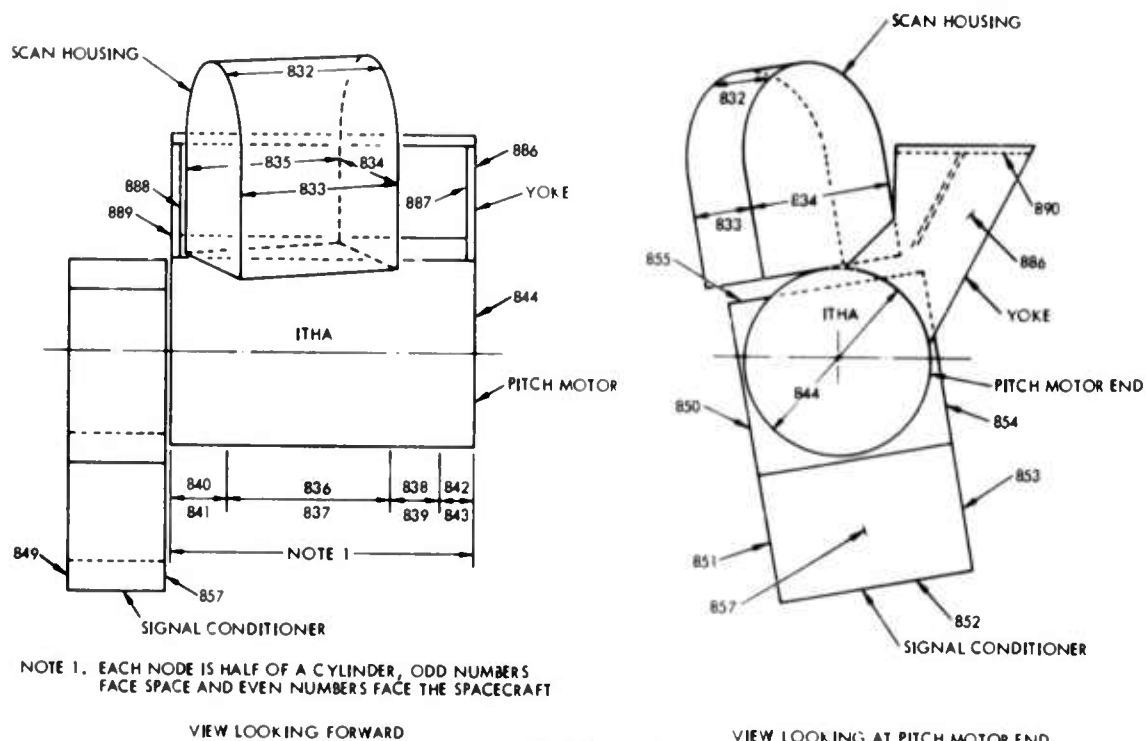


RM-20A TITANIUM TORQUE BOX & SOLAR ARRAY EXTENSION

Figure 4 . P72-2 Spacecraft TMM Nodal Pattern for RM-20A Payload



RM-20B RADIATOR SHIELDS



RM-20B SENSOR

Figure 5. P72-2 Spacecraft TMM Nodal Pattern for RM-20B Payload

APPENDIX A

1/10 SCALE MODEL P72-2 S/C & PAYLOAD SURFACE MATERIALS

The 1/10 scale model P72-2 spacecraft and payloads have been covered with the same surface materials used on the actual spacecraft and associated payloads. The attached tabulation sheet identifies each material by name, manufacturer and includes general values of α and ϵ .

In several instances, a covering material substitution has been made by applying a thinner sheet material (0.002" vs 0.005") but the reflective aluminum coating is identical and therefore the reflective signature is unchanged.

In addition, pictorial representations of the model (6 sheets) are included to indicate all external surface areas and covering material identification.

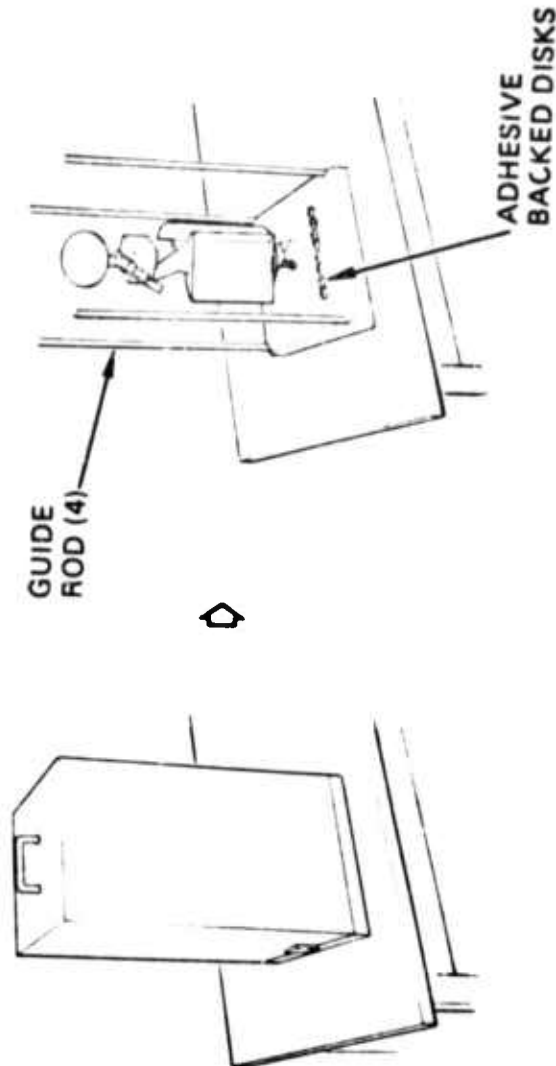
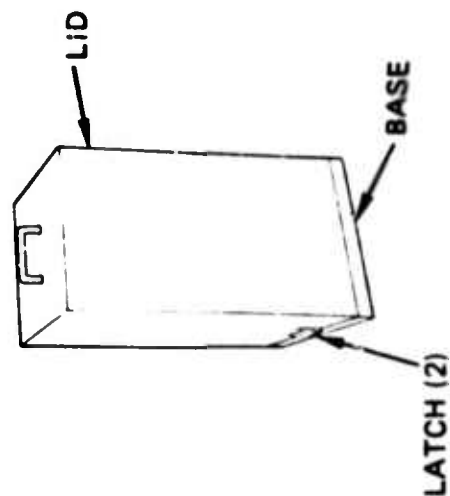
The first figure (page 17) describes the shipping container, its contents method of removal, etc. Sheet 1 through 6 describe the S/C and payload surfaces with call out numbers (Manufacturers ID's) which are tabulated on page 16, providing material name, values of α and ϵ .

Sheet number 7 is a supplier generated spectral plot of solar cell reflectance and sheet 8 is a specification for the second surface quartz mirrors, supplied and installed on the model by LMSC.

RANGE OF α AND ϵ VALUES FOR VARIOUS THERMAL CONTROL COATINGS

THERMAL CONTROL COATING	MANUFACTURER'S IDENTIFICATION	RANGE OF α VALUES INCLUDING UV DEGRADATION	RANGE OF ϵ VALUES
N/P SILICON SOLAR CELL WITH 6 MIL BLUE-FILTERED MICROSHEET COVER SLIDE AND A.R. COATING	EOS #1141658	0.83-0.85	0.78-0.80
SOLAR CELL INTERCELL COATING	FIBERITE MKB7703 WITH EPON 828/VER-SAMID 140 TOPCOATING	0.62-0.64	0.86-0.88
5 MIL FEP TEFLON/VACUUM DEPOSITED SILVER VACUUM DEPOSITED INCONEL/ACRYLIC ADHESIVE	SCHJELDAHL G401900	0.05-0.10	0.77-0.80
2 MIL FEP TEFLON/VACUUM DEPOSITED AL ACRYLIC ADHESIVE	SCHJELDAHL G400200	0.10-0.14	0.60-0.67
0.5 MIL FEP TEFLON/VACUUM DEPOSITED ALUMINUM/ACRYLIC ADHESIVE	SCHJELDAHL G402800	0.10-0.14	0.40-0.44
5 MIL FEP TEFLON/VACUUM DEPOSITED ALUMINUM	SCHJELDAHL G400900	0.10-0.14	0.77-0.80
VACUUM DEPOSITED ALUMINUM/1 MIL KAPTON/ACRYLIC ADHESIVE	SCHJELDAHL G401000	0.10-0.13	0.03-0.05
WHITE INORGANIC THERMAL CONTROL COATING	NORTH AMERICAN SPEC. MR0125-031	0.18-0.19	0.87-0.94
WHITE THERMAL CONTROL COATING	IITRI NO. S-13G	0.20-0.25	0.85-0.90
FLAT BLACK THERMAL CONTROL PAINT	3M BLACK VELVET NO. 401C10	0.85-0.97	0.85-0.90
FLAT WHITE THERMAL CONTROL PAINT	3M WHITE VELVET	--	--

CONTAINER & ONE TENTH SCALE MODEL P72-2 SPACECRAFT AND PAYLOADS

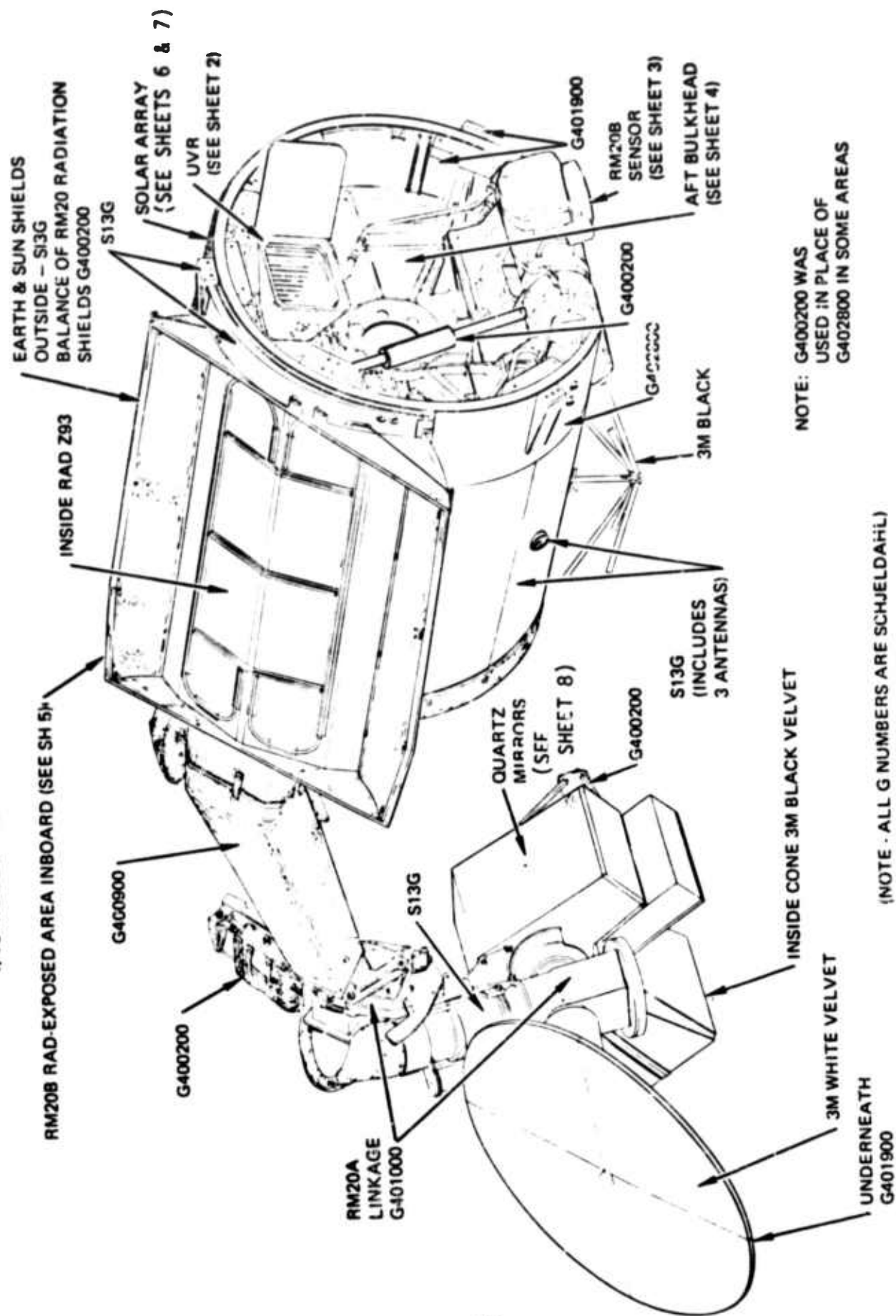


CAUTION: This container houses the tenth-scale P72-2 model. Handle with care and hand-carry only. White gloves must be worn at all times when handling this model.

REMOVAL PROCEDURE

1. Unfasten the two (2) side latches (indicated).
2. Gently remove lid vertically until it clears model and corner guide rods.
3. Remove guide rods (4) from model base.
4. Rotate model approximately six (6) turns counter clockwise to remove from screw mounting post.
5. Mounting holes may be covered with supplied adhesive-backed disks if desired.

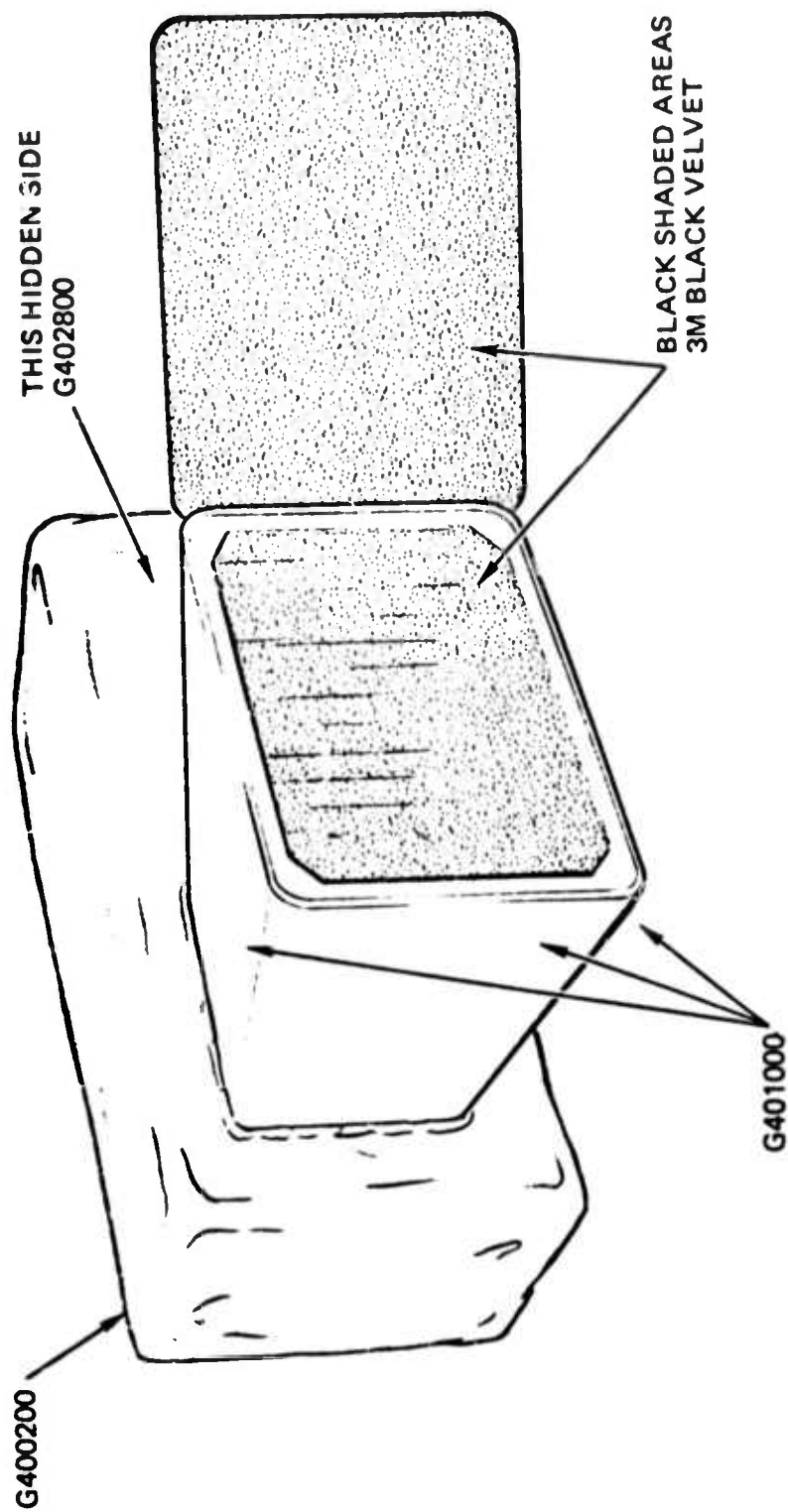
1/10 MODEL P72-2 S/C & PAYLOAD SURFACE MATERIALS



NOTE: G400200 WAS USED IN PLACE OF G402800 IN SOME AREAS

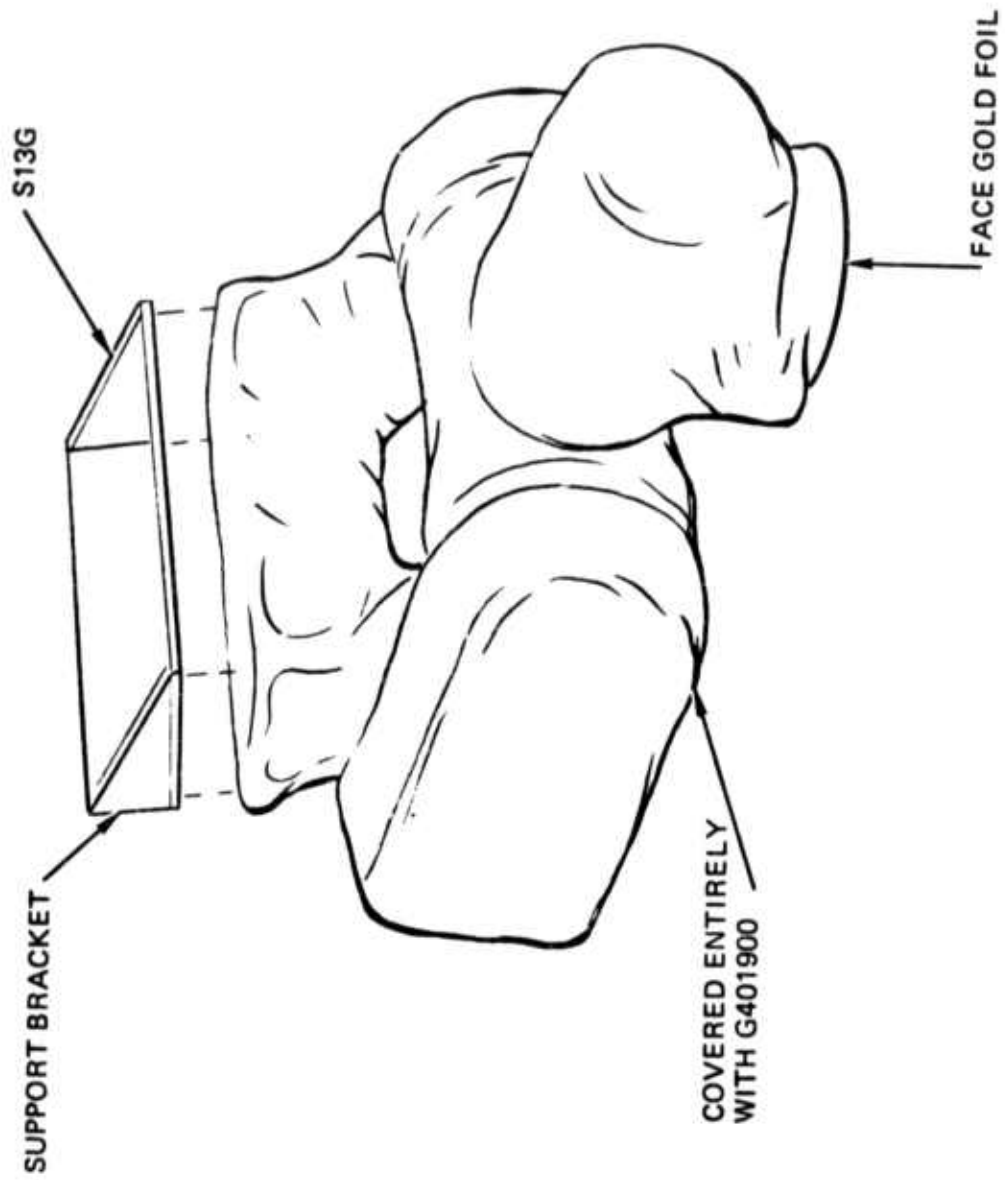
(NOTE - ALL G NUMBERS ARE SCHJELDAHL) SHEET 1

UVR PAYLOAD
SURFACE MATERIALS



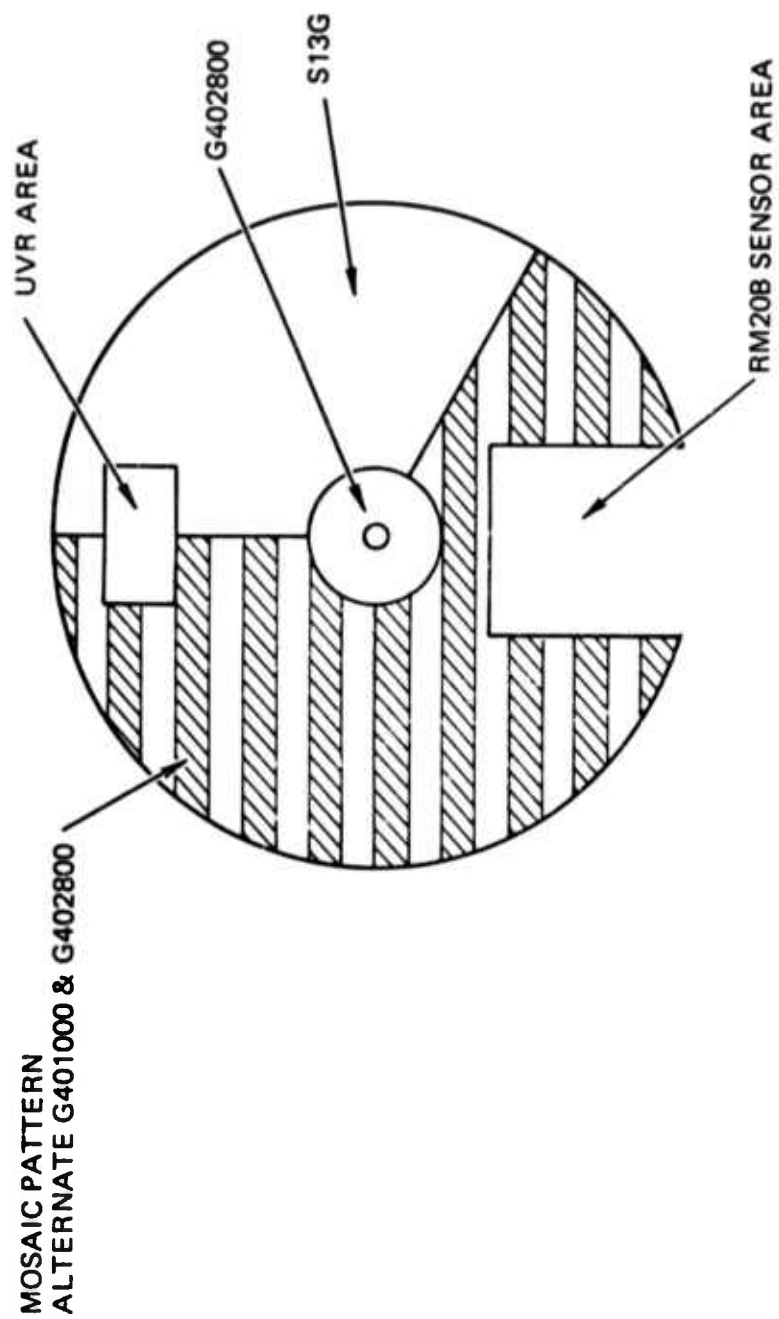
SHEET 2

RM20B SENSOR
SURFACE MATERIAL



SHEET 3

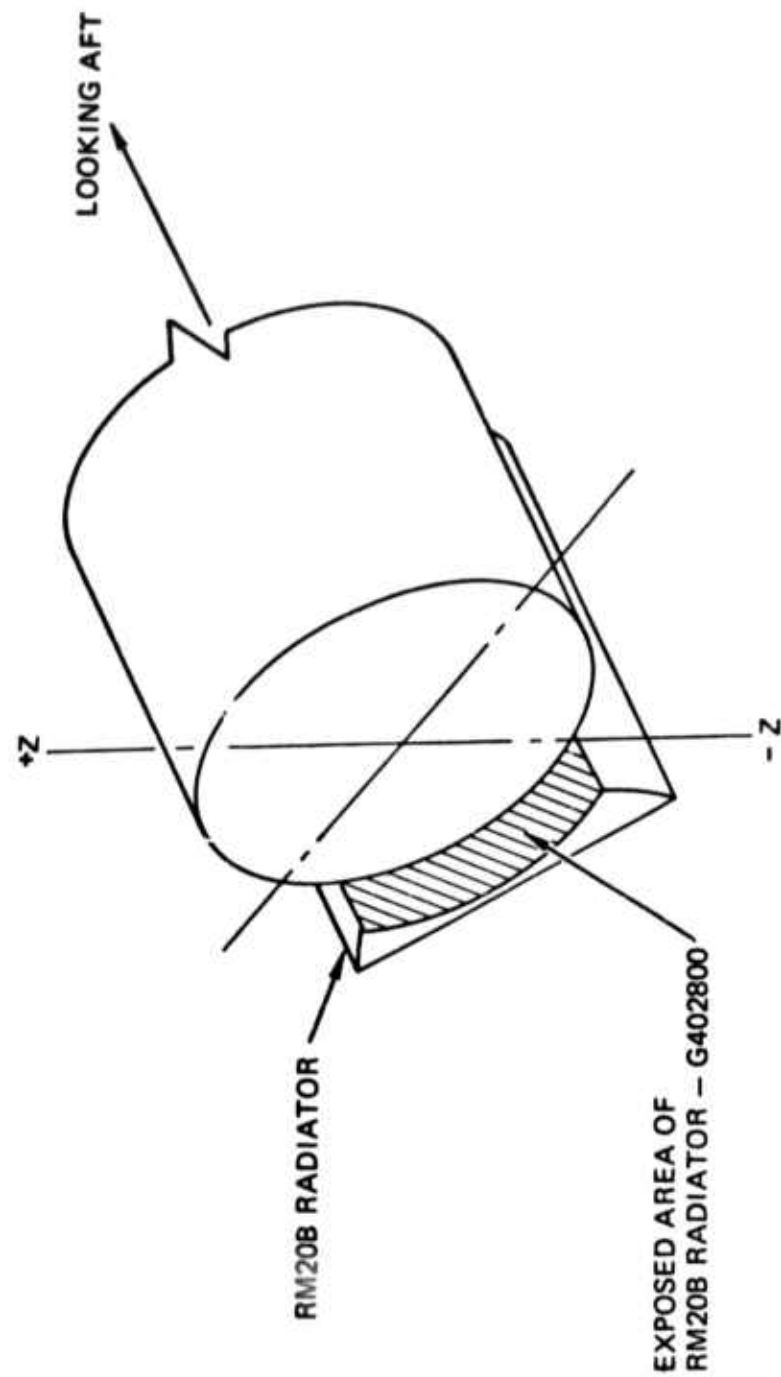
AFT BULKHEAD SURFACE MATERIAL



VIEW LOOKING FWD.

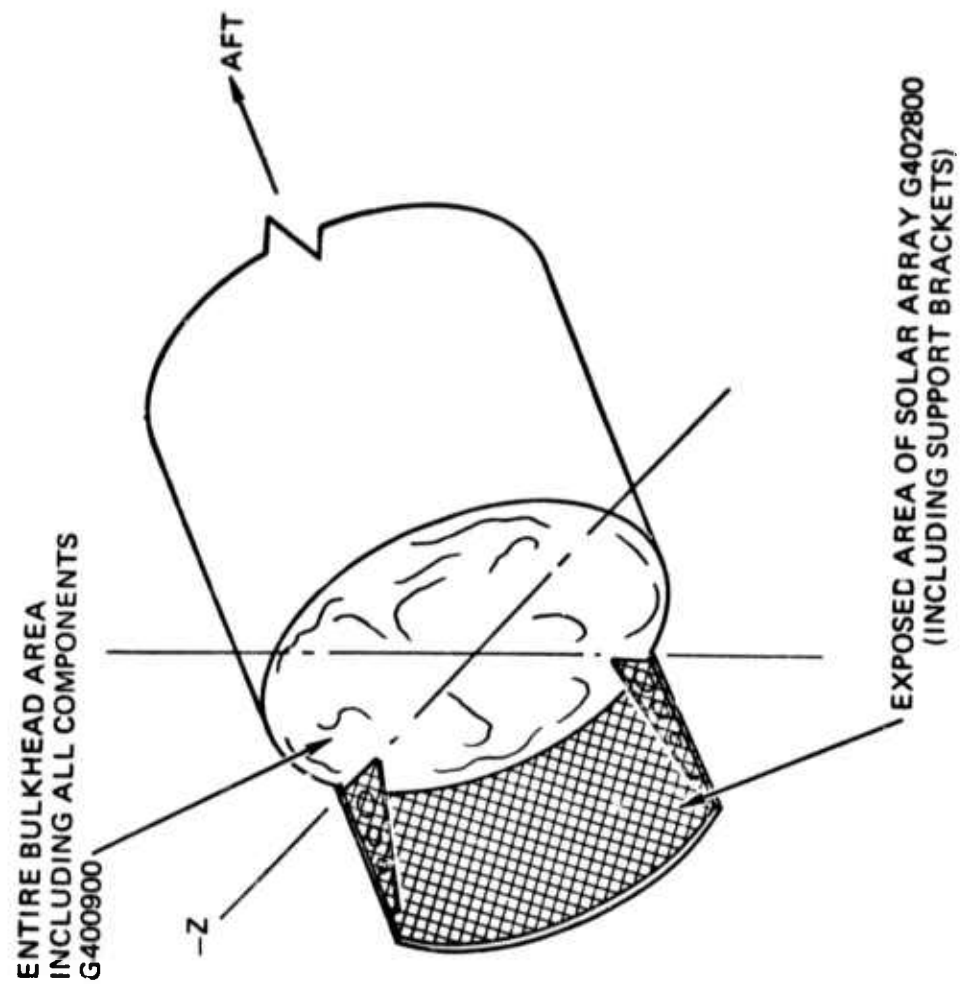
SHEET 4

RM208 RADIATOR OVERHANG
SURFACE MATERIAL



SHEET 5

FOREWARD BULKHEAD
& SOLAR ARRAY OVERHANG
SURFACE MATERIALS



DIRECTIONAL SPECTRAL REFLECTANCE

ANGLES

POLAR, $\theta = 20^\circ$

AZIMUTHAL, $\psi =$

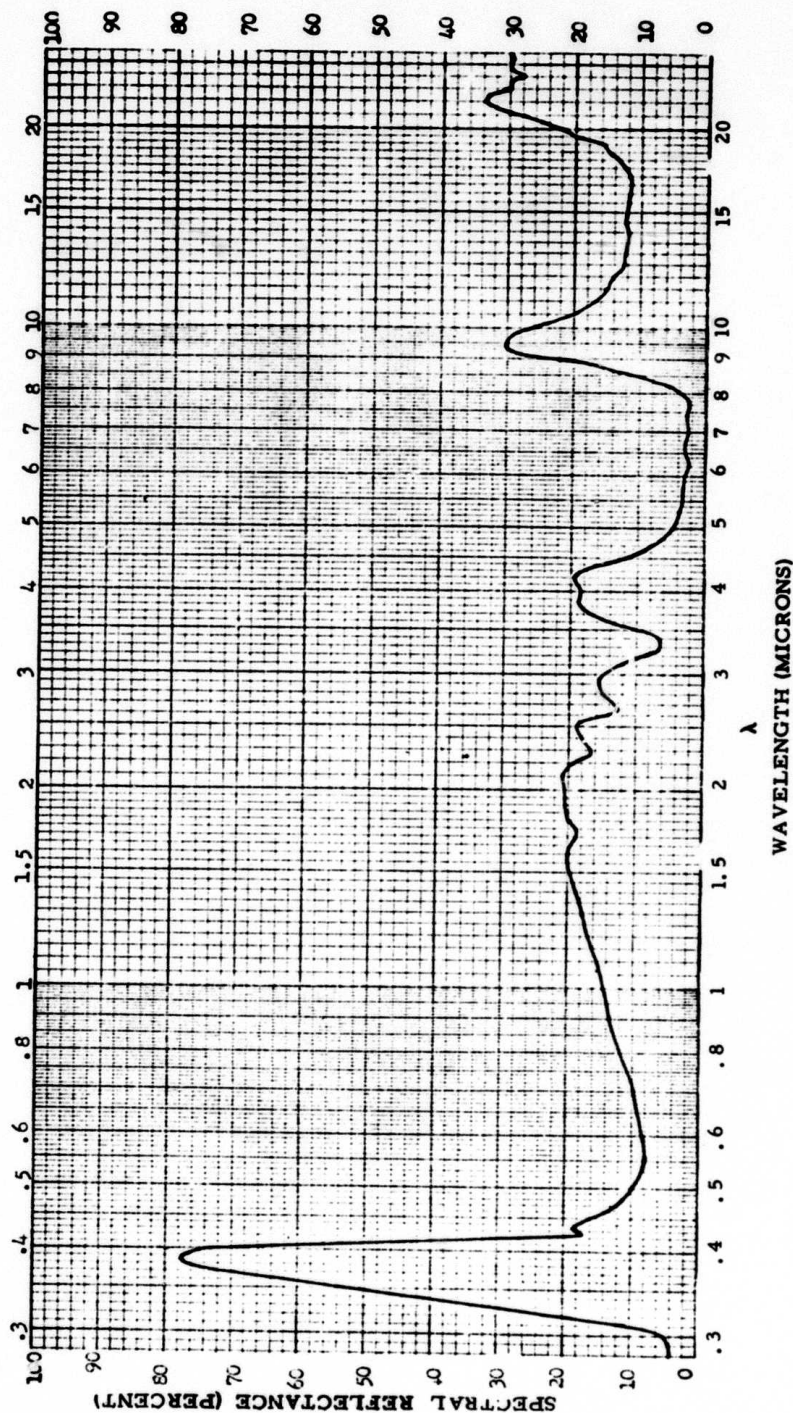
CUSTOMER CODE NO.:

TRW DESIGNATION: 219-73

MATERIAL: Solar Cell

MEASUREMENT
INSTRUMENTS

28 - 2.5 μ - Edwards-type
Integrating Sphere
2.5 - 26 μ - Gier Dunkle
Heated Cavity Reflectometer



SHEET 7. SOLAR CELL SPECTRAL REFLECTANCE

SECOND SURFACE QUARTZ MIRROR
INSTALLATION REQUIREMENTS

Supply and install OSR's (second surface quartz mirrors) on model (RM-20A). Butt-joint with tolerance compatible with good workmanship. Use full size OSR's and trim as required to maintain edge geometry. Installed elements shall maintain bond integrity when exposed to normal laboratory atmosphere and exposure to direct or simulated sunlight.

Supplier: Lockheed Missile and Space Company
Palo Alto, California

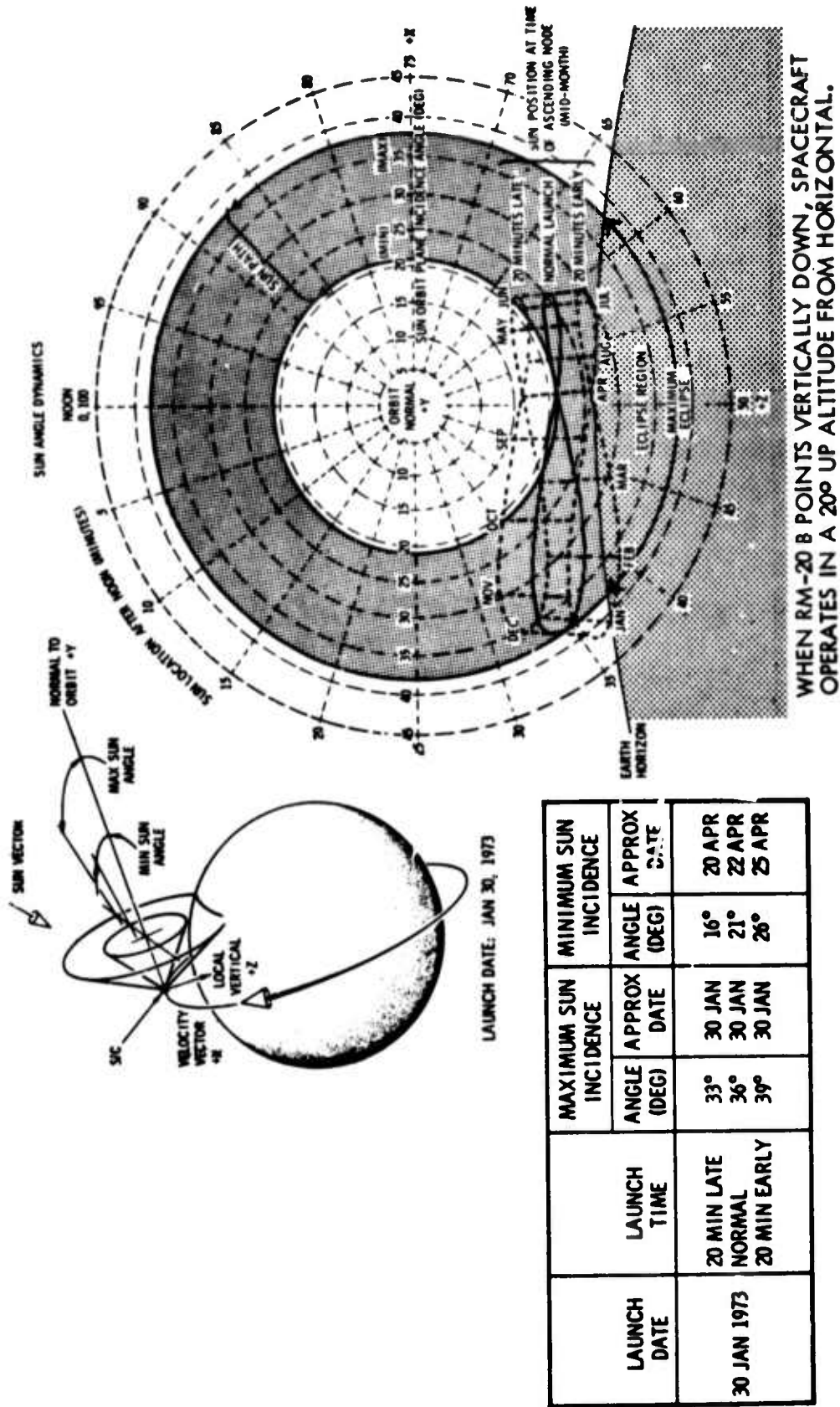
APPENDIX B

SUN ANGLE DYNAMICS

The attached figure was supplied to Lockheed Missile & Space Co. 6/8/74 to permit determination of representative orientation of the model spacecraft, illumination source, camera, etc., to simulate orbital geometry in a laboratory environment.

A study of the numerical table will aid in interpretation of the Sun Angle Dynamics Graph. Basically, the shaded circular segment represents the envelope of the sun's path and interception with the earth horizon portrays the eclipse region. The "figure 8" traces permit determination of maximum and minimum sun incidence angles as well as approximate date.

SUN ANGLE DYNAMICS



74G-RM20B052

APPENDIX C

P72-2 ORBIT TRACE

Orbit trace data for a typical operational situation over two selected ground was supplied to Lockheed Missile & Space Co. as documented in this report. The trajectory data for the P72-2 mission represents one orbital pass over Maui on the 39th day of the mission.

Trajectory data for the P72-2 mission has been generated assuming the conditions tabulated below and predicts various angular relations between the spacecraft, sun and tracking station as indicated in the following portions of this report and attached data sheets.

DATA INPUT CONDITIONS

Launch Date - August 7, 1974

Date of Required Orbit - September 15, 1974

Node Location - 10° West of Dusk Terminator

Inclination - 98.36°

Altitude - 400 n.mi.

This data does not reflect the actual launch date but is accurate for the conditions stated above and portrays the format of future data generation.

GROUND STATIONS

White Sands Lat $32^{\circ} 25m. 4s$ North - Long $106^{\circ} 19m. 15s$
West - Station #1

Maui Lat $20^{\circ} 42m. 30s$ North - Long $203^{\circ} 44m. 31s$ East -
Station #2

The orbit is assumed to begin directly over the launch site at WTR. This assumption contributes error to the geographic prediction of any subsequent orbital pass; but the error is not cumulative, and is less significant than injection error at launch. More precise data can be obtained, when necessary, using the Atlas F launch trajectory.

The initial conditions refer to the descending node previous to the Maui pass. The printout begins at that point and continues to the next descending node. The plotted ground traces being at the ascending node preceding the pass over Maui.

The computer printout (Enclosure 1) provides, at one-minute intervals, the following data (Reference Figure 1). Angles are in degrees, and distances are in nautical miles. The columns of interest are identified with asterisks (*) for convenience.

1. Sun Azimuth (SUN AZ) - The azimuth of the Sun, as measured clockwise from the direction of S/C motion, in the horizontal plane.
2. Sun Elevation (SUN ELEV) - The elevation angle of the Sun from the horizontal plane at the S/C.
3. Sun/Orbit Plane Angle (SUN/ORB. PL ANGLE) - The angle between the line-of-sight to the sun from the S/C and the orbit plane.
4. Pitch Angle to the Sun (PITCH ANGLE SUN SEEK, PNL) - The pitch angle, up from the horizontal, to the plane in which the Sun/Orbit Plane Angle is measured.

The true azimuth (AZ), slant range (SL.R.) and angular elevation (ELEV) of the S/C as seen from each of the tracking stations is also shown in the print-out. When the elevation angle is greater than the minimum visible from the station, the S/C is in view. The minimum may vary from 5° to 30° depending upon the terrain, facilities, and atmospheric conditions. This particular orbit shows view times at Maui from about 4 to 10.5 minutes. However, the location of the orbit cannot be predicted precisely before the actual launch.

The orbital pass for which the data was developed occurs 39 days after launch. The geographic location of the orbit after such a period is very sensitive to the values of the orbital radius and inclination. All sun-synchronous orbits have different nodal rates along the equator.

The tolerance on altitude and inclination for the mission will no doubt allow a large variation (as high as 25°) in the location of any node on the 39th day. The satellite will have made about 564 orbital passes in that time. Thus, a difference of only 0.044° in the spacing between orbits would create a 25° accumulated longitudinal displacement after 39 days. This phenomenon affects only the visibility of the satellite from the ground stations, not the sun angles.

A polar plot of the P72-2 trajectory has been constructed and the visibility envelopes from Maui and White Sands have been plotted on a polar map of the earth. For any given position of the orbit node on the equator, the viewing time at each station can be easily seen. The orbit which corresponds to the computed trajectory is shown in Figure 2 with 3 minute intervals. Figure 3 is a computer-drawn linear cartesian plot of the same orbit, also with 3 minute intervals. The latitude-longitude history is tabulated in columns 2 and 3 of the printout (LAT, LONG) under SATELLITE POSITION FROM STATIONS.

The inertial location of the orbit nodes moves eastward at about 0.9856° /day which is the earth's mean orbital rate about the sun. The right ascension and longitude of the ascending node during the illustrated orbital pass is included in the printout (NODE RT ASC, and NODE LONG).

(This data is typical but does not represent the actual P72-2 launch date which is unknown at present.)

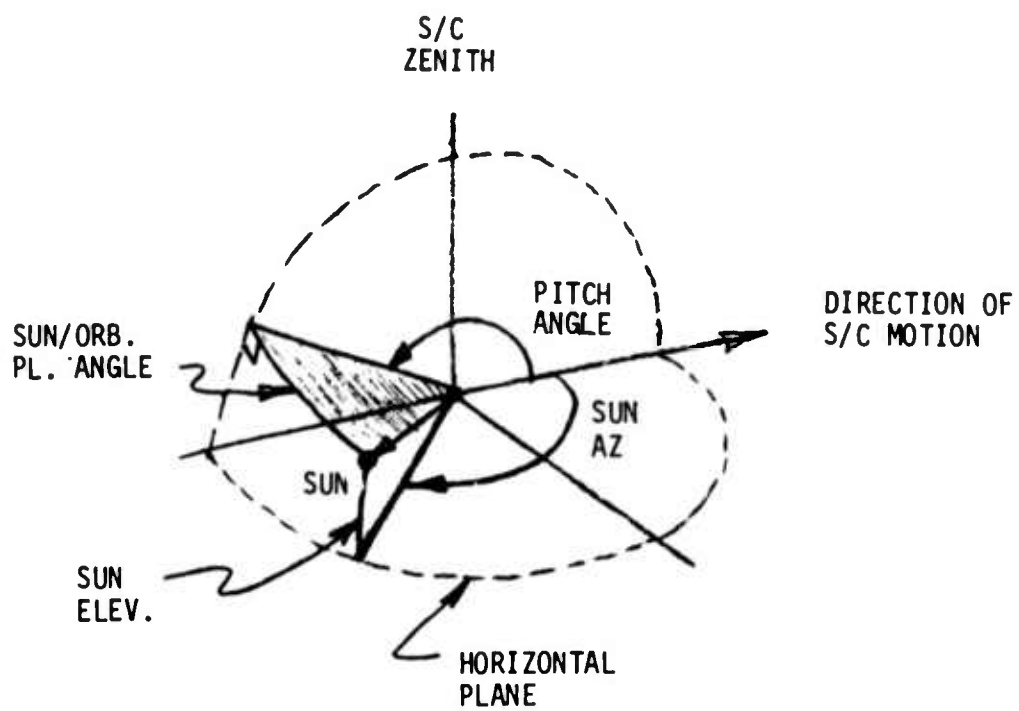


Figure 1. Sun Angle Definitions

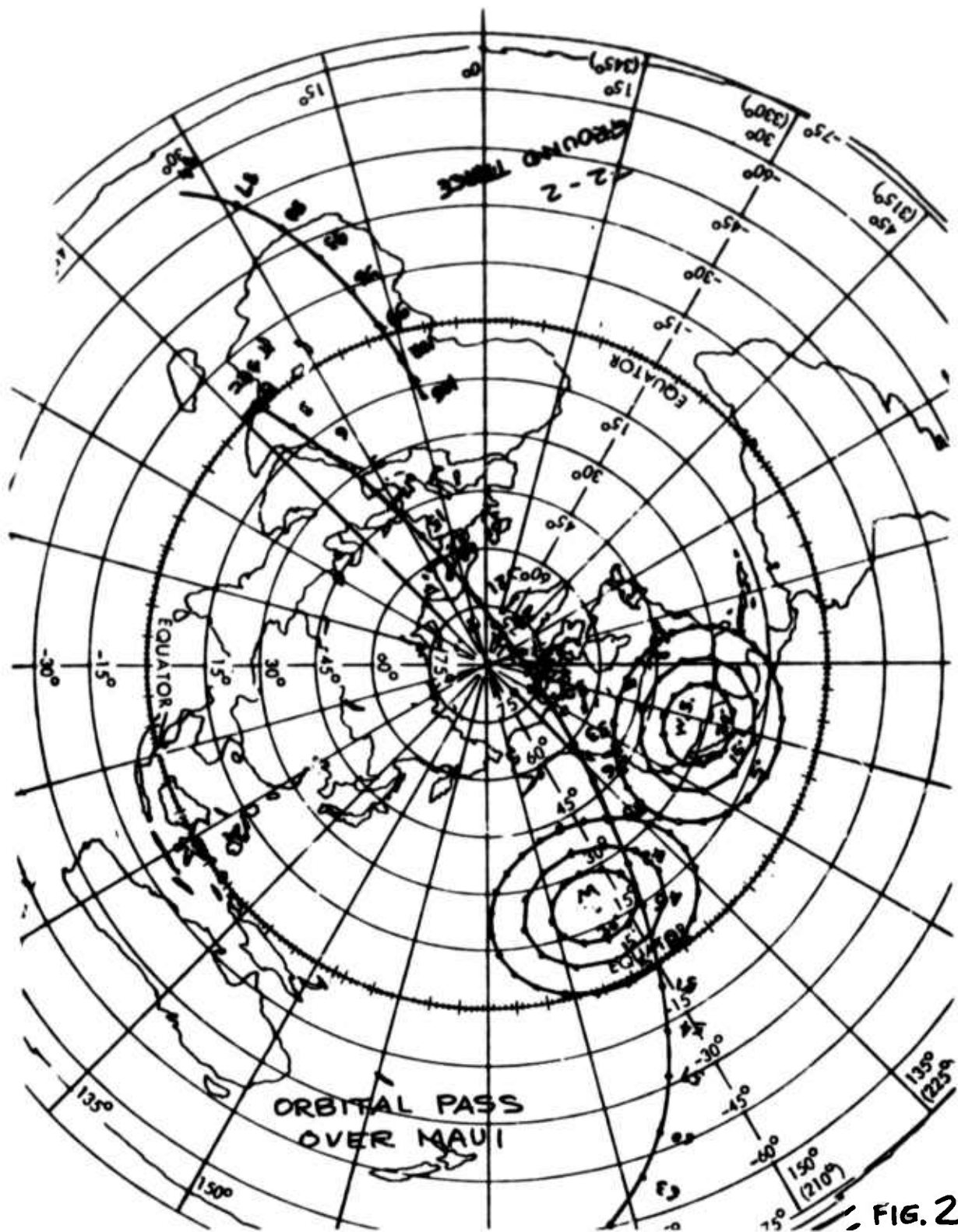


FIG. 2

0.019	280.	72.00	45.98	42306.016	-77.25	86.489	3840.31	3432.93	7.97	3.25	101.63	12.07	-77.93	164.28	NO
0.020	283.	72.00	45.73	42306.020	-74.45	77.615	3840.37	3433.20	7.40	2.54	101.81	12.08	-77.92	167.78	NO
0.021	287.	72.00	45.48	42306.020	-71.42	71.411	3840.43	3433.54	7.00	1.82	101.94	12.08	-77.92	171.27	NO
0.022	290.	72.00	45.23	42306.020	-68.26	66.859	3840.49	3433.95	6.71	1.10	102.03	12.08	-77.92	174.74	NO
0.022	294.	72.00	44.98	42306.020	-65.03	63.370	3840.55	3434.42	6.50	0.37	102.07	12.08	-77.92	178.24	NO
0.023	297.	72.00	44.73	42306.020	-61.74	60.590	3840.61	3434.95	6.33	-0.36	102.07	12.08	-77.92	181.72	NO
0.024	301.	72.00	44.48	42306.023	-58.41	58.303	3840.66	3435.53	6.19	-1.04	102.03	12.08	-77.92	185.19	NO
0.025	304.	72.00	44.23	42306.023	-55.07	56.371	3840.71	3436.15	6.08	-1.81	101.95	12.08	-77.92	188.67	NO
0.026	311.	72.00	43.98	42306.023	-51.70	54.701	3840.76	3436.79	5.99	-2.52	101.92	12.08	-77.92	192.13	NO
0.026	314.	72.00	43.72	42306.023	-48.33	53.229	3840.81	3437.46	5.91	-3.22	101.65	12.08	-77.92	195.59	NO
0.027	318.	72.00	43.47	42306.023	-44.95	51.910	3840.85	3438.14	5.83	-3.92	101.44	12.08	-77.92	199.04	NO
0.027	321.	72.00	43.22	42306.023	-41.57	50.712	3840.89	3438.82	5.77	-4.59	101.18	12.08	-77.92	202.51	NO
0.028	325.	72.00	42.97	42306.027	-38.18	49.609	3840.93	3439.50	5.71	-5.26	100.90	12.08	-77.92	205.96	NO
0.028	328.	72.00	42.72	42306.027	-34.79	48.543	3840.97	3440.15	5.66	-5.90	100.54	12.08	-77.92	209.40	NO
0.029	332.	72.00	42.47	42306.027	-31.41	47.619	3841.00	3440.78	5.62	-6.52	100.20	12.08	-77.92	212.84	NO
0.030	335.	72.00	42.22	42306.027	-28.02	46.705	3841.03	3441.37	5.57	-7.11	99.79	12.08	-77.92	216.24	NO
0.031	339.	72.00	41.97	42306.027	-24.63	45.833	3841.05	3441.91	5.53	-7.69	99.35	12.08	-77.92	219.71	NO
0.031	342.	72.00	41.72	42306.027	-21.25	44.995	3841.07	3442.40	5.49	-8.23	98.88	12.08	-77.92	223.14	NO
0.032	345.	72.00	41.47	42306.031	-17.86	44.183	3841.09	3442.83	5.45	-8.75	98.38	12.08	-77.91	226.56	NO
0.033	349.	72.00	41.22	42306.031	-14.48	43.393	3841.10	3443.20	5.42	-9.23	97.84	12.09	-77.91	229.94	NO
0.034	352.	72.00	40.97	42306.031	-11.11	42.620	3841.11	3443.50	5.38	-9.68	97.28	12.09	-77.91	233.40	NO
0.035	-4.	72.00	40.72	42306.031	-7.73	41.860	3841.12	3443.72	5.35	-10.09	96.69	12.09	-77.91	236.81	NO
0.035	-1.	72.00	40.47	42306.031	-4.36	41.108	3841.12	3443.86	5.31	-10.47	96.07	12.09	-77.91	240.21	NO
0.035	2.	72.00	40.22	42306.035	-1.00	40.362	3841.11	3443.92	5.28	-10.82	95.44	12.09	-77.91	243.62	NO
0.036	6.	72.00	39.96	42306.035	2.37	39.617	3841.11	3443.91	5.25	-11.12	94.78	12.09	-77.91	247.02	NO
0.037	9.	72.00	39.71	42306.035	5.72	38.870	3841.10	3443.81	5.22	-11.38	94.11	12.09	-77.91	250.41	NO
0.037	13.	72.00	39.46	42306.035	9.08	38.118	3841.08	3443.64	5.18	-11.60	93.42	12.09	-77.91	253.80	NO
0.038	16.	72.00	39.21	42306.035	12.42	37.357	3841.06	3443.39	5.15	-11.79	92.72	12.09	-77.91	257.18	NO
0.039	19.	72.00	38.96	42306.039	15.77	36.584	3841.04	3443.07	5.11	-11.92	92.01	12.09	-77.91	260.57	NO
0.040	23.	72.00	38.71	42306.039	19.11	35.793	3841.02	3442.68	5.08	-12.03	91.29	12.09	-77.91	263.94	NO
0.040	26.	72.00	38.46	42306.039	22.44	34.981	3840.99	3442.24	5.04	-12.08	90.57	12.09	-77.91	267.32	NO
0.041	29.	72.00	38.21	42306.039	25.76	34.143	3840.95	3441.73	5.00	-12.09	89.85	12.09	-77.91	270.69	NO
0.042	33.	72.00	37.96	42306.039	29.08	33.271	3840.92	3441.19	4.96	-12.04	89.13	12.09	-77.91	274.05	NO
0.043	36.	72.00	37.71	42306.043	32.39	32.358	3840.88	3440.60	4.91	-11.99	88.42	12.09	-77.91	277.41	NO
0.044	39.	72.00	37.46	42306.043	35.70	31.396	3840.83	3439.98	4.87	-11.88	87.71	12.10	-77.90	280.77	NO
0.044	43.	72.00	37.21	42306.043	38.99	30.374	3840.79	3439.34	4.82	-11.73	87.01	12.10	-77.90	284.12	NO
0.045	46.	72.00	36.96	42306.043	42.28	29.277	3840.74	3438.68	4.76	-11.53	86.32	12.10	-77.90	287.47	NO
0.046	50.	72.00	36.71	42306.043	45.56	28.088	3840.69	3438.02	4.70	-11.30	85.64	12.10	-77.90	290.81	NO
0.047	53.	72.00	36.45	42306.043	48.82	26.785	3840.64	3437.37	4.63	-11.03	84.99	12.10	-77.90	294.15	NO
0.048	56.	72.00	36.20	42306.043	52.07	25.337	3840.58	3436.72	4.55	-10.72	84.35	12.10	-77.90	297.49	NO
0.049	60.	72.00	35.95	42306.047	55.30	23.702	3840.53	3436.10	4.45	-10.37	83.73	12.10	-77.90	300.82	NO
0.050	63.	72.00	35.70	42306.047	58.50	21.826	3840.47	3435.51	4.35	-9.99	83.14	12.10	-77.90	304.15	NO
0.051	66.	72.00	35.45	42306.047	61.68	19.624	3840.41	3434.94	4.22	-9.58	82.57	12.10	-77.90	307.47	NO
0.052	69.	72.00	35.20	42306.047	64.82	16.985	3840.35	3434.43	4.06	-9.13	82.03	12.10	-77.90	310.79	NO

0.050	72.00	34.95	42306.047	67.91	13.721	3840.29	3434.00	3.86	-8.66	81.51	12.10	-77.90	314.11	NU
0.051	72.00	34.70	42306.047	70.92	9.552	3840.22	3431.60	3.59	-8.16	91.04	12.10	-77.90	317.42	NU
0.051	72.00	34.45	42306.051	73.82	4.017	3840.16	3433.26	3.24	-7.63	80.57	12.11	-77.89	320.73	NU
0.052	72.00	34.20	42306.051	76.53	356.369	3840.10	3432.99	2.75	-7.08	80.15	12.11	-77.84	324.03	NU
0.053	72.00	33.95	42306.051	78.92	345.327	3840.04	3432.79	2.03	-6.50	79.77	12.11	-77.84	327.33	NU
0.053	72.00	33.70	42306.051	80.74	329.406	3839.47	3432.67	0.98	-5.40	79.41	12.11	-77.49	330.62	NU
0.054	72.00	33.45	42306.051	81.61	308.342	3839.91	3432.61	23.60	-5.29	79.10	12.11	-77.49	333.92	NU
0.055	72.00	33.20	42306.055	81.24	286.019	3839.85	3432.64	22.13	-4.66	78.81	12.11	-77.44	337.20	NU
0.056	72.00	32.95	42306.055	79.81	267.746	3839.79	3432.73	20.92	-4.02	78.57	12.11	-77.89	340.49	NU
0.056	72.00	32.69	42306.055	77.64	254.816	3839.73	3432.90	20.08	-3.36	78.36	12.11	-77.89	343.76	NU
0.057	72.00	32.44	42306.055	75.07	245.901	3839.67	3433.13	19.50	-2.70	78.19	12.11	-77.89	347.04	NU
0.058	72.00	32.19	42306.055	72.28	239.577	3839.62	3433.44	19.10	-2.02	78.06	12.11	-77.84	350.31	NU
0.058	72.00	31.94	42306.055	69.35	234.899	3839.56	3433.80	18.80	-1.35	77.96	12.11	-77.84	353.57	NU
0.059	72.00	31.69	42306.059	66.35	231.295	3839.51	3434.22	18.58	-0.64	77.89	12.11	-77.49	356.84	NU
0.060	72.00	31.44	42306.059	63.29	228.419	3839.47	3434.70	18.40	0.02	77.89	12.11	-77.84	360.10	NU
0.060	72.00	31.19	42306.059	60.19	226.052	3839.42	3435.22	18.26	0.70	77.91	12.11	-77.84	363.35	NU
0.061	72.00	30.94	42306.059	57.07	224.054	3839.37	3435.77	18.14	1.38	77.96	12.11	-77.89	366.60	NU
0.062	72.00	30.69	42306.059	53.93	222.329	3839.33	3436.36	18.05	2.06	78.06	12.11	-77.89	369.84	NU
0.062	72.00	30.44	42306.059	50.78	220.813	3839.30	3436.98	17.96	2.72	78.19	12.11	-77.84	373.09	NU
0.063	72.00	30.19	42306.062	47.63	219.459	3839.26	3437.60	17.89	3.38	78.36	12.12	-77.84	376.32	NU
0.064	72.00	29.94	42306.062	44.47	218.231	3839.23	3438.24	17.82	4.03	78.56	12.12	-77.84	379.56	NU
0.065	72.00	29.69	42306.062	41.30	217.105	3839.21	3438.88	17.76	4.66	78.80	12.12	-77.84	382.79	NU
0.065	72.00	29.44	42306.062	38.14	216.061	3839.18	3439.51	17.71	5.28	79.08	12.12	-77.88	386.01	NU
0.066	72.00	29.19	42306.062	34.97	215.085	3839.16	3440.12	17.66	5.88	79.39	12.12	-77.84	389.23	NU
0.067	72.00	28.93	42306.066	31.80	214.163	3839.14	3440.71	17.62	6.47	79.73	12.12	-77.88	392.45	NU
0.067	72.00	28.68	42306.066	28.64	213.286	3839.13	3441.26	17.58	7.03	80.10	12.12	-77.88	395.66	NU
0.068	72.00	28.43	42306.066	25.47	212.447	3839.12	3441.78	17.54	7.57	80.51	12.12	-77.89	398.87	NU
0.069	72.00	28.18	42306.066	22.31	211.639	3839.12	3442.25	17.50	8.09	80.94	12.12	-77.88	402.07	NU
0.069	72.00	27.93	42306.066	19.15	210.856	3839.12	3442.68	17.46	8.58	81.41	12.12	-77.88	405.27	NU
0.070	72.00	27.68	42306.066	15.99	210.095	3839.12	3443.05	17.43	9.04	81.90	12.12	-77.88	408.47	NU
0.071	72.00	27.43	42306.070	12.83	209.349	3839.13	3443.35	17.40	9.48	82.41	12.12	-77.87	411.66	NU
0.072	72.00	27.18	42306.070	9.68	208.617	3839.14	3443.60	17.37	9.89	82.95	12.12	-77.87	414.85	NU
0.072	72.00	26.93	42306.070	6.53	207.894	3839.16	3443.78	17.33	10.26	83.51	12.12	-77.87	418.03	NU
0.073	72.00	26.68	42306.070	3.39	207.177	3839.18	3443.89	17.30	10.61	84.09	12.12	-77.87	421.21	NU
0.074	72.00	26.43	42306.070	0.25	206.464	3839.20	3443.93	17.27	10.92	84.69	12.12	-77.87	424.38	NU
0.074	72.00	26.18	42306.074	-2.99	205.752	3839.23	3443.90	17.24	11.20	85.31	12.13	-77.87	427.55	NU
0.075	72.00	25.93	42306.074	-6.02	205.039	3839.26	3443.80	17.21	11.44	85.94	12.13	-77.87	430.72	NU
0.076	72.00	25.68	42306.074	-9.14	204.320	3839.29	3443.63	17.18	11.64	86.59	12.13	-77.87	433.88	NU
0.076	72.00	25.42	42306.074	-12.27	203.594	3839.33	3443.40	17.15	11.81	87.24	12.13	-77.87	437.04	NU
0.077	72.00	25.17	42306.074	-15.38	202.857	3839.37	3443.11	17.11	11.95	87.90	12.13	-77.87	440.19	NU
0.078	72.00	24.92	42306.074	-18.50	202.106	3839.41	3442.76	17.08	12.05	88.57	12.13	-77.87	443.34	NU
0.078	72.00	24.67	42306.078	-21.60	201.337	3839.46	3442.35	17.05	12.11	89.24	12.13	-77.87	446.48	NU
0.079	72.00	24.42	42306.078	-24.70	200.546	3839.51	3441.90	17.01	12.13	89.92	12.13	-77.87	449.62	NU
0.080	72.00	24.17	42306.078	-27.80	199.728	3839.56	3441.40	16.97	12.12	90.59	12.13	-77.87	452.76	NU

(DAY)	TIME	LAT	LONG	STATION 1	STATION 2	STATION 3	STATION 4	STATION 5	STATION 6	MO				
0.001	211.	72.00	23.92	42306.078	-30.88	198.878	3839.61	3440.87	16.93	12.07	91.26	12.13	-77.87	95.84
0.001	214.	72.00	23.67	42306.078	-33.96	197.989	3839.66	3440.31	16.89	11.98	91.93	12.13	-77.87	95.02
0.002	218.	72.00	23.42	42306.078	-37.04	197.053	3839.72	3439.72	16.84	11.85	92.59	12.13	-77.87	102.14
0.003	221.	72.00	23.17	42306.082	-40.10	196.060	3839.78	3439.12	16.79	11.70	93.24	12.14	-77.86	105.26

SATELLITE POSITION FROM GROUND STATIONS

(DAY)	TIME	LAT	LONG	* STATION 1		* STATION 2		STATION 3		STATION 4		STATION 5		STATION 6	
				AZ	ELEV SL.R.	AZ	ELEV SL.R.	AZ	ELEV SL.R.	AZ	ELEV SL.R.	AZ	ELEV SL.R.	AZ	ELEV SL.R.
0.0	0.0	0.0	233.0	215.	-10.	2390.	122.	-8.	2240.	0.	0.	0.	0.	0.	0.
0.001	-3.6	232.2	214.	-12.	2597.	128.	-9.	2341.	0.	0.	0.	0.	0.	0.	0.
0.001	-7.2	231.4	212.	-15.	2803.	133.	-11.	2455.	0.	0.	0.	0.	0.	0.	0.
0.002	-10.7	230.7	211.	-17.	3007.	137.	-12.	2581.	0.	0.	0.	0.	0.	0.	0.
0.003	-14.3	229.9	210.	-20.	3210.	142.	-14.	2716.	0.	0.	0.	0.	0.	0.	0.
0.003	-17.8	229.0	209.	-22.	3409.	145.	-16.	2858.	0.	0.	0.	0.	0.	0.	0.
0.004	-21.4	228.2	208.	-24.	3605.	149.	-17.	3006.	0.	0.	0.	0.	0.	0.	0.
0.005	-24.9	227.3	207.	-26.	3799.	152.	-19.	3159.	0.	0.	0.	0.	0.	0.	0.
0.006	-28.5	226.4	206.	-28.	3988.	155.	-21.	3315.	0.	0.	0.	0.	0.	0.	0.
0.007	-32.0	225.5	205.	-30.	4174.	158.	-23.	3473.	0.	0.	0.	0.	0.	0.	0.
0.007	-35.5	224.5	204.	-32.	4355.	160.	-24.	3633.	0.	0.	0.	0.	0.	0.	0.
0.008	-39.1	223.4	204.	-34.	4532.	163.	-26.	3793.	0.	0.	0.	0.	0.	0.	0.
0.008	-42.6	222.2	203.	-36.	4705.	165.	-28.	3954.	0.	0.	0.	0.	0.	0.	0.
0.009	-46.0	221.0	202.	-38.	4873.	167.	-30.	4113.	0.	0.	0.	0.	0.	0.	0.
0.010	-49.5	219.6	201.	-40.	5036.	169.	-31.	4272.	0.	0.	0.	0.	0.	0.	0.
0.010	-53.0	218.0	201.	-42.	5194.	171.	-33.	4429.	0.	0.	0.	0.	0.	0.	0.
0.011	-56.4	216.2	200.	-44.	5347.	173.	-35.	4584.	0.	0.	0.	0.	0.	0.	0.
0.012	-59.8	214.1	199.	-46.	5494.	175.	-37.	4737.	0.	0.	0.	0.	0.	0.	0.
0.012	-63.2	211.6	198.	-48.	5636.	176.	-39.	4887.	0.	0.	0.	0.	0.	0.	0.
0.013	-66.5	208.5	197.	-50.	5772.	178.	-40.	5034.	0.	0.	0.	0.	0.	0.	0.
0.014	-69.8	204.5	196.	-52.	5902.	180.	-42.	5178.	0.	0.	0.	0.	0.	0.	0.
0.015	-72.9	199.1	195.	-54.	6026.	181.	-44.	5318.	0.	0.	0.	0.	0.	0.	0.
0.015	-75.9	191.7	194.	-56.	6145.	183.	-46.	5454.	0.	0.	0.	0.	0.	0.	0.
0.016	-78.5	180.9	192.	-57.	6257.	185.	-47.	5586.	0.	0.	0.	0.	0.	0.	0.
0.017	-80.6	164.7	191.	-59.	6363.	186.	-49.	5714.	0.	0.	0.	0.	0.	0.	0.
0.017	-81.6	142.6	190.	-61.	6463.	188.	-51.	5838.	0.	0.	0.	0.	0.	0.	0.
0.018	-81.2	118.8	188.	-63.	6556.	189.	-53.	5957.	0.	0.	0.	0.	0.	0.	0.
0.019	-79.6	95.7	186.	-64.	6643.	191.	-54.	6071.	0.	0.	0.	0.	0.	0.	0.
0.019	-77.3	84.5	184.	-66.	6723.	193.	-56.	6180.	0.	0.	0.	0.	0.	0.	0.
0.020	-74.5	77.6	182.	-68.	6797.	194.	-58.	6284.	0.	0.	0.	0.	0.	0.	0.
0.021	-71.4	71.4	179.	-69.	6864.	196.	-59.	6383.	0.	0.	0.	0.	0.	0.	0.
0.022	-68.3	64.9	176.	-71.	6924.	198.	-61.	6477.	0.	0.	0.	0.	0.	0.	0.
0.022	-65.0	43.4	172.	-72.	6978.	200.	-63.	6545.	0.	0.	0.	0.	0.	0.	0.
0.023	-61.7	44.6	168.	-74.	7025.	202.	-64.	6647.	0.	0.	0.	0.	0.	0.	0.
0.023	-58.6	39.3	163.	-75.	7072.	204.	-66.	6743.	0.	0.	0.	0.	0.	0.	0.
0.024	-55.1	34.4	157.	-76.	7099.	207.	-68.	6899.	0.	0.	0.	0.	0.	0.	0.

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APPENDIX D
THERMAL MATH MODEL (TMM)

CONVRG	0.050,0.,3000,3000				10000101
NETWRK	0. 0.				
FINITE					00000106
PRINTI	6.				00000108
RCFACT	0.9				00000110
FIXED					00000112
LABEL					00000114
MINRC	0.10				00000130
GO					
FND					00000199
VOLT	1,-460.				00010001
ENTER	2 1020 75.				00010002
VOLT	816,-154.				00010816
VOLT	825,70.				00010825
ENTER	2001 2023 70.	RM 20A			00200005
ENTER	2031 2041 70.	SUPPORT ENCLOSURE			00200010
VOLT	2042 70. 2043 70.	2045 -70. 2046 70. 2047 70. 2049 -70.	TORQUE		B00200020
VOLT	2050 70.	DEPLOYMENT MECH.			00200030
VOLT	2061 70.	NITROGEN BOTTLE			00200040
VOLT	2062 38.	FWD SHIELD OF RM 20B RADIATOR			00200050
VOLT	2063 38.				00200052
END					00019999
FACTOR	1.390	H(BTU/IN2-HR-F)			00020010
COND	011 011 113 1.25 060 011 213 1.25 070 011 313 2.20			T/R 3	00020011
COND	013 013 133 97.5			BATT 2	00020013
COND	015 015 315 35.1 071 015 415 11.5			LOAD CONT	00020015
COND	016 016 115 8.10 072 016 215 8.10			CLA	00020016
COND	017 017 012 .936 061 012 316 .410 062 012 416 .288			RS/W + 8KT *	00020017
COND	018 018 031 15.4			GYRO-8KT	00020018
COND	019 019 432 .450			PAM	00020019
COND	020 020 117 2.88 073 020 217 2.95			SIG COND *	00020020
COND	021 021 315 16.3 074 021 415 8.10			CMD DECODER	00020021
COND	022 022 115 14.2 075 022 215 10.2			CMD DECODER	00020022
COND	023 023 318 12.3			RCVR DEMOD	00020023
COND	024 024 318 12.3			RCVR DEMOD	00020024
COND	025 025 216 19.7 076 025 316 05.3			CLK SEQ	00020025
COND	026 026 217 14.7			PCM 5A5	00020026
COND	027 027 317 14.7			PCM 5A4	00020027
COND	028 028 416 31.4			LOW 5A13	00020028
COND	029 029 316 31.4			LOW 5A12	00020029
COND	030 030 031 15.4			GYRO-8KT	00020030
COND	031 031 431 3.5			GAKT-BLKD *	00020031

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QDOT 219,19,19,3,415:3,219,7001,1;	00020218
QDOT 220,20,20,3,415:3,220,7001,1;	00020220
QDOT 222,22,22,3,415:3,222,7001,1;	00020222
QDOT 224,24,24,3,415:3,224,7001,1;	00020224
QDOT 226,26,26,3,415:3,226,7001,1;	00020226
QDOT 228,28,28,3,415:3,228,7001,1;	00020228
QDOT 232,32,32,3,415:3,232,7001,1;	00020232
QDOT 234,34,34,3,415:3,234,7001,1;	00020234
QDOT 236,36,36,3,415:3,236,7001,1;	00020226
QDOT 238,38,38,3,415:3,238,7001,1;	00020238
QDOT 241,68,68,0,856:3,241,7001,1;	00020241
QDOT 244,44,44,3,415:3,244,7001,1;	00020244
QDOT 246,46,46,3,415:3,246,7001,1;	00020246
QDOT 247,47,47,3,415:3,247,7001,1;	00020247
QDOT 249,71,71,3,415:3,249,7001,1;	00020249
QDOT 252,52,52,3,415:3,252,7001,1;	00020252
QDOT 255,55,55,3,415:3,255,7001,1;	00020254
QDOT 256,56,56,3,415:3,256,7001,1;	00020256
QDOT 258,58,58,3,415:3,258,7001,1;	00 2 258
QDOT 261,15,15,3,415:3,261,7001,1;	00020262
QDOT 263,63,63,3,415:3,263,7001,1;	00020264
QDOT 265,15,15,3,415:3,265,7001,1;	00020265
QDOT 267,67,67,2,560:3,241,7001,1;	00020267
FACTOR 0.0806	00020300
COND 301,101,151,63,50,302,102,152,73,30,303,103,153,73,30	00020301
COND 304,104,154,64,70,305,105,155,23,80	00020304
FACTOR 0.0754	00020305
COND 306,104,156,20,20	00020306
COND 307,105,157,63,00,308,106,158,73,30,309,107,159,73,30	00020307
COND 310,108,160,73,30,311,109,161,73,30	00020310
FACTOR 1.0 ND OF HEAT PIPES	00020312
COND 313,151,162,66,50,314,152,162,76,80,315,153,162,76,80	00020313
COND 316,154,162,76,80,317,155,162,35,70,318,156,163,30,20	00020316
COND 319,157,163,76,80,320,158,163,76,80,321,159,163,76,80	00020319
COND 322,160,163,76,80,323,161,163,76,80	00020322
FACTOR 1.0 ND OF HEAT PIPES	00020323
COND 324,151,152,0952,325,152,153,0837,326,153,154,0900	00020324
COND 327,155,154,0900,328,156,157,0952,329,157,158,0837	00020327
COND 330,158,159,0837,331,159,160,0837,332,160,161,0837	00020330
FACTOR 1.0 ND OF HEAT PIPES	00020332
COND 333,154,156,19,27,334,155,157,22,74	00020333
FACTOR 0.0941	00020350
COND 351,201,251,63,50,352,202,252,73,30,353,203,253,73,30	00020351

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COND 466,454,462,76.80,467,455,462,35.70,468,456,463,30.20	00020466
COND 469,457,463,76.80,470,458,463,76.80,471,459,463,76.80	00020469
COND 472,460,463,76.80,473,460,463,0.0	00020472
COND 472,460,463,76.80,473,460,463,0.0	00020473
COND 474,451,452,0.0952,475,452,453,0.0837,476,453,454,0.0900	00020474
COND 477,455,454,0.0900,478,456,457,0.0952,479,457,458,0.0837	00020477
COND 480,458,459,0.0837,481,459,460,0.0837	00020480
COND 483,454,456,19.27,484,455,457,22.74	00020481
COND 483,454,456,19.27,484,455,457,22.74	00020482
COND 483,454,456,19.27,484,455,457,22.74	00020483
COND 951,401,551,63.5,952,402,552,73.3,953,403,553,73.3	00020484
COND 954,404,554,64.7,955,405,555,23.8	00020485
COND 956,404,556,20.2,957,405,557,63.0,958,406,558,73.3	00020486
COND 959,407,559,73.3,960,408,560,73.3,961,409,561,73.3	00020487
COND 962,551,562,66.5,963,552,562,76.8,964,553,562,76.8	00020488
COND 965,554,562,76.8,966,555,562,35.7,967,556,563,30.2	00020489
COND 968,557,563,76.8,969,558,563,76.8,970,559,563,76.8	00020490
COND 971,560,563,76.8,972,561,563,76.8	00020491
COND 973,551,552,0.0952,974,552,553,0.0837,975,553,554,0.0900	00020492
COND 976,554,555,0.0900,977,556,557,0.0952,978,557,558,0.0837	00020493
COND 979,558,559,0.0837,980,559,560,0.0837,981,560,561,0.0837	00020494
COND 582,554,556,19.27,583,555,557,22.74	00020495
COND 582,554,556,19.27,583,555,557,22.74	00020496
COND 582,554,556,19.27,583,555,557,22.74	00020497
COND 582,554,556,19.27,583,555,557,22.74	00020498
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COND 582,554,556,19.27,583,555,557,22.74	00020500
COND 582,554,556,19.27,583,555,557,22.74	00020501
COND 582,554,556,19.27,583,555,557,22.74	00020502
COND 582,554,556,19.27,583,555,557,22.74	00020503
COND 582,554,556,19.27,583,555,557,22.74	00020504
COND 582,554,556,19.27,583,555,557,22.74	00020505
COND 582,554,556,19.27,583,555,557,22.74	00020506
COND 582,554,556,19.27,583,555,557,22.74	00020507
COND 582,554,556,19.27,583,555,557,22.74	00020508
COND 582,554,556,19.27,583,555,557,22.74	00020509
COND 582,554,556,19.27,583,555,557,22.74	00020510
COND 582,554,556,19.27,583,555,557,22.74	00020511
COND 582,554,556,19.27,583,555,557,22.74	00020512
COND 582,554,556,19.27,583,555,557,22.74	00020513
COND 582,554,556,19.27,583,555,557,22.74	00020514
COND 582,554,556,19.27,583,555,557,22.74	00020515
COND 582,554,556,19.27,583,555,557,22.74	00020516
COND 582,554,556,19.27,583,555,557,22.74	00020517
COND 582,554,556,19.27,583,555,557,22.74	00020518
COND 582,554,556,19.27,583,555,557,22.74	00020519
COND 582,554,556,19.27,583,555,557,22.74	00020520
COND 582,554,556,19.27,583,555,557,22.74	00020521
COND 582,554,556,19.27,583,555,557,22.74	00020522
COND 582,554,556,19.27,583,555,557,22.74	00020523
COND 582,554,556,19.27,583,555,557,22.74	00020524
COND 582,554,556,19.27,583,555,557,22.74	00020525
COND 582,554,556,19.27,583,555,557,22.74	00020526

QDNT 527,303,303:0.740:3,013,4001,1:528,304,304,0.420:3,014,4001,1;	00020528
QDNT 529,305,305:0.090:3,015,4001,1:530,306,306,0.250:3,016,4001,1;	00020530
QDNT 531,307,307:0.250:3,017,4001,1:532,308,308,0.250:3,018,4001,1;	00020532
QDNT 533,309,309:0.250:3,019,4001,1:534,310,310,0.300:3,020,4001,1;	00020534
QDNT 535,311,311:0.000:3,021,4001,1:536,312,312,0.300:3,022,4001,1;	00020536
FACTOR 1.174 BODY SECTION 4XX AREA FT2 SOLAR	00020537
QDNT 537,401,401:0.635:3,011,4001,1:538,402,402,0.740:3,012,4001,1;	* 00020538
QDNT 539,403,403:0.740:3,013,4001,1:540,404,404,0.420:3,014,4001,1;	00020540
FACTOR 1.320 BODY SECTION 4XX AREA FT2 SOLAR	00020541
QDNT 541,405,405:0.090:3,015,4001,1:542,406,406,0.227:3,016,4001,1;	00020542
QDNT 543,407,407:0.227:3,017,4001,1:544,408,408,0.250:3,018,4001,1;	00020544
QDNT 545,409,409:0.250:3,019,4001,1:546,410,410,0.000:3,020,4001,1;	00020546
QDNT 547,411,411:0.000:3,021,4001,1:548,412,412,0.300:3,022,4001,1;	00020548
FACTOR 1.380 AFT SKIRT 5XX AREA FT2 SOLAR	00020549
QDNT 549,501,501:0.740:3,011,4001,1:550,502,502,0.740:3,012,4001,1;	00020550
QDNT 551,503,503:0.740:3,013,4001,1:552,504,504,0.420:3,014,4001,1;	00020552
QDNT 553,505,505:0.090:3,015,4001,1:556,508,508,0.130:3,018,4001,1;	00020554
QDNT 557,509,509:0.130:3,019,4001,1:558,510,510,0.300:3,020,4001,1;	00020558
QDNT 559,511,511:0.000:3,021,4001,1:560,512,512,0.300:3,022,4001,1;	00020559
FACTOR 0.416 BODY SECTION 09X AREA FT2 SOLAR	00020560
QDNT 561,091,0.489:3,11,4001,1:562,092,0.570:3,12,4001,1;	* 00020561
QDNT 563,093,0.570:3,13,4001,1:564,094,0.330:3,14,4001,1;	00020563
FACTOR 2.470 FWD BLKWD AREA FT2 SOLAR	00020565
QDNT 565,740,740:0.0615:3,023,4001,1:566,741,741,0.126:3,023,4001,1;	00020566
QDNT 567,742,742:0.126:3,023,4001,1:568,743,743,0.150:3,023,4001,1;	00020568
QDNT 569,744,744:0.150:3,023,4001,1:570,745,745,0.342:3,023,4001,1;	00020570
QDNT 571,746,746:0.000:3,023,4001,1;	00020571
FACTOR 0.146 BODY SECTION 49X AREA FT2 SOLAR	00020572
QDNT 572,491,0.461:3,011,4001,1:573,492,0.537:3,012,4001,1;	00020573
QDNT 574,493,0.537:3,013,4001,1:575,494,0.313:3,014,4001,1;	00020574
FACTOR 0.740 SOLAR ARRAY EXT SECTION 19X SOLAR	00020575
QDNT 576,191,0.480:3,011,4001,1:577,192,0.583:3,012,4001,1;	00020576
QDNT 578,193,0.583:3,013,4001,1:579,194,0.292:3,014,4001,1;	00020578
FACTOR 0.740 SOLAR ARRAY EXT SECTION 29X 39X SOLAR	00020579
QDNT 580,291,0.960:3,011,4001,1:591,292,1.166:3,012,4001,1;	00020580
QDNT 592,293,1.166:3,013,4001,1:593,294,0.583:3,014,4001,1;	00020582
QDNT 584,391,0.480:3,011,4001,1:585,392,0.583:3,012,4001,1;	00020584
QDNT 586,393,0.583:3,013,4001,1:587,394,0.292:3,014,4001,1;	00020586
FACTOR .15 RM20A SUPPORT STRUCTURE + TORQUE BOX SOLAR	00020587
QDNT 588,749,0.871:3,014,4001,1:589,750,0.850:3,014,4001,1;	00020588
FACTOR 0.641 BODY SECTION 1XX AREA FT2 EARTH EMIT	00020600
QDNT 601,101,101:0.678:3,111,4001,1:602,102,102,0.790:3,112,4001,1;	* 00020602
QDNT 603,103,103:0.790:3,113,4001,1:604,104,104,0.785:3,114,4001,1;	00020604

FACTOR 1.0575	90DY SECTION 1XX	AREA	FT2	EARTH EMIT	00020605
QDOT 605,105,105,0.780:3,115,4001,1:606,106,106,0.860:3,116,4001,1:					00020606
QDOT 607,107,107,0.860:3,117,4001,1:608,108,108,0.860:3,118,4001,1:					00020608
QDOT 609,109,109,0.939:3,119,4001,1:610,110,110,0.900:3,120,4001,1:					00020610
QDOT 611,111,111,0.000:3,121,4001,1:612,112,112,0.000:3,122,4001,1:					00020612
FACTOR 0.788	BODY SECTION 2XX	AREA	FT2	EARTH EMIT	00020613
QDOT 613,201,201,0.678:3,111,4001,1:614,202,202,0.790:3,112,4001,1:					00020614
QDOT 615,203,203,0.790:3,113,4001,1:616,204,204,0.785:3,114,4001,1:					00020616
QDOT 617,205,205,0.780:3,115,4001,1:618,206,206,0.860:3,116,4001,1:					00020618
QDOT 619,207,207,0.860:3,117,4001,1:620,208,208,0.860:3,118,4001,1:					00020620
QDOT 621,209,209,0.964:3,119,4001,1:622,210,210,0.000:3,120,4001,1:					00020622
QDOT 623,211,211,0.000:3,121,4001,1:624,212,212,0.300:3,122,4001,1:					00020624
FACTOR 0.862	BODY SECTION 3XX	AREA	FT2	EARTH EMIT	00020625
QDOT 625,301,301,0.678:3,111,4001,1:626,302,302,0.790:3,112,4001,1:					00020626
QDOT 627,303,303,0.790:3,113,4001,1:628,304,304,0.785:3,114,4001,1:					00020628
QDOT 629,305,305,0.780:3,115,4001,1:630,306,306,0.860:3,116,4001,1:					00020630
QDOT 631,307,307,0.860:3,117,4001,1:632,308,308,0.860:3,118,4001,1:					00020632
QDOT 633,309,309,0.991:3,119,4001,1:634,310,310,0.000:3,120,4001,1:					00020634
QDOT 635,311,311,0.000:3,121,4001,1:636,312,312,0.000:3,122,4001,1:					00020636
FACTOR 1.174	BODY SECTION 4XX	AREA	FT2	EARTH EMIT	00020637
QDOT 637,401,401,0.678:3,111,4001,1:638,402,402,0.790:3,112,4001,1:					00020638
QDOT 639,403,403,0.790:3,113,4001,1:640,404,404,0.785:3,114,4001,1:					00020640
FACTOR 1.320	BODY SECTION 4XX	AREA	FT2	EARTH EMIT	00020641
QDOT 641,405,405,0.780:3,115,4001,1:642,406,406,0.782:3,116,4001,1:					00020642
QDOT 643,407,407,0.782:3,117,4001,1:644,408,408,0.860:3,118,4001,1:					00020644
QDOT 645,409,409,1.026:3,119,4001,1:646,410,410,0.000:3,120,4001,1:					00020646
QDOT 647,411,411,0.000:3,121,4001,1:648,412,412,0.000:3,122,4001,1:					00020648
FACTOR 1.380	AFT SKIRT	5XX	AREA	FT2	00020649
QDOT 649,501,501,0.790:3,111,4001,1:650,502,502,0.790:3,112,4001,1:					00020650
QDOT 651,503,503,0.790:3,113,4001,1:652,504,504,0.785:3,114,4001,1:					00020652
QDOT 653,505,505,0.780:3,115,4001,1:656,508,508,0.470:3,118,4001,1:					00020656
QDOT 657,509,509,0.470:3,119,4001,1:658,501,501,0.230:3,117,4001,1:					00020658
QDOT 659,511,511,0.170:3,115,4001,1:660,502,502,0.300:3,118,4001,1:					00020659
FACTOR 0.416	BODY SECTION 09X	AREA	FT2	EARTH	00020660
QDOT 661,091,0.647:3,111,4001,1:662,092,0.754:3,112,4001,1:					00020661
QDOT 663,093,0.754:3,113,4001,1:664,094,0.762:3,114,4001,1:					00020663
FACTOR 2.470	FWD BLKHD	AREA	FT2	EARTH EMIT	00020665
QDOT 665,740,740,0.316:3,123,4001,1:666,741,741,0.648:3,123,4001,1:					00020666
QDOT 667,742,742,0.648:3,123,4001,1:668,743,743,0.770:3,123,4001,1:					00020668
QDOT 669,744,744,0.770:3,123,4001,1:670,745,745,0.216:3,123,4001,1:					00020670
QDOT 671,746,746,0.000:3,123,4001,1:					00020671
FACTOR 1.00	AFT BULKHEAD				00020672
QDOT 672,430,430,0.051:3,124,4001,1:673,431,431,1.357:3,124,4001,1:					00020673

QDOT	674,432,432,1.860:3,124,4001,1:675,433,433,0.318:3,124,4001,1:	00020674
QDOT	676,434,434,0.455:3,124,4001,1:677,435,435,0.525:3,124,4001,1:	00020676
QDOT	678,436,436,0.260:3,124,4001,1:679,437,437,0.725:3,124,4001,1:	00020678
QDOT	680,491,0.641:3,111,4001,1:681,492,0.747:3,112,4001,1:	00020679
QDOT	682,493,0.747:3,113,4001,1:683,494,0.763:3,114,4001,1:	00020680
QDOT	684,191,0.480:3,111,4001,1:685,192,0.583:3,112,4001,1:	00020682
QDOT	686,193,0.583:3,113,4001,1:687,194,0.292:3,114,4001,1:	00020684
QDOT	688,291,0.960:3,111,4001,1:689,292,1.166:3,112,4001,1:	00020686
QDOT	690,293,1.166:3,113,4001,1:691,294,0.583:3,114,4001,1:	00020687
QDOT	692,391,0.480:3,111,4001,1:693,392,0.583:3,112,4001,1:	00020688
QDOT	694,393,0.583:3,113,4001,1:695,394,1.166:3,114,4001,1:	00020690
QDOT	696,749,0.792:3,114,4001,1:697,750,0.944:3,114,4001,1:	00020692
QDOT	698,291,0.960:3,111,4001,1:689,292,1.166:3,112,4001,1:	00020694
QDOT	699,293,1.166:3,113,4001,1:691,294,0.583:3,114,4001,1:	00020695
QDOT	700,293,1.166:3,113,4001,1:693,392,0.583:3,112,4001,1:	00020696
QDOT	701,001,101,0.647,702,001,102,0.790,703,001,103,0.790	00020700
QDOT	702,001,101,0.647,702,001,102,0.790,703,001,103,0.790	00020702
QDOT	703,001,101,0.647,702,001,102,0.790,703,001,103,0.790	00020704
QDOT	704,001,104,0.785	00020705
QDOT	705,001,105,0.780,706,001,106,0.860	00020708
QDOT	706,001,106,0.860,707,001,107,0.860	00020711
QDOT	707,001,107,0.860,708,001,108,0.860	00020713
QDOT	708,001,108,0.860,709,001,109,0.860	00020714
QDOT	709,001,109,0.860,710,001,110,0.000	00020717
QDOT	710,001,110,0.000,711,001,111,0.000	00020720
QDOT	711,001,111,0.000,712,001,112,0.000	00020723
QDOT	712,001,112,0.000,713,001,113,0.000	00020725
QDOT	713,001,113,0.000,714,001,114,0.000	00020726
QDOT	714,001,114,0.000,715,001,115,0.000	00020729
QDOT	715,001,115,0.000,716,001,116,0.000	00020732
QDOT	716,001,116,0.000,717,001,117,0.000	00020735
QDOT	717,001,117,0.000,718,001,118,0.000	00020737
QDOT	718,001,118,0.000,719,001,119,0.000	00020738
QDOT	719,001,119,0.000,720,001,120,0.000	00020739
QDOT	720,001,120,0.000,721,001,121,0.000	00020741
QDOT	721,001,121,0.000,722,001,122,0.000	00020742
QDOT	722,001,122,0.000,723,001,123,0.000	00020744
QDOT	723,001,123,0.000,724,001,124,0.000	00020747
QDOT	724,001,124,0.000,725,001,125,0.000	00020749
QDOT	725,001,125,0.000,726,001,126,0.000	00020750
QDOT	726,001,126,0.000,727,001,127,0.000	00020753
QDOT	727,001,127,0.000,728,001,128,0.000	
QDOT	728,001,128,0.000,729,001,129,0.000	
QDOT	729,001,129,0.000,730,001,130,0.000	
QDOT	730,001,130,0.000,731,001,131,0.000	
QDOT	731,001,131,0.000,732,001,132,0.000	
QDOT	732,001,132,0.000,733,001,133,0.000	
QDOT	733,001,133,0.000,734,001,134,0.000	
QDOT	734,001,134,0.000,735,001,135,0.000	
QDOT	735,001,135,0.000,736,001,136,0.000	
QDOT	736,001,136,0.000,737,001,137,0.000	
QDOT	737,001,137,0.000,738,001,138,0.000	
QDOT	738,001,138,0.000,739,001,139,0.000	
QDOT	739,001,139,0.000,740,001,140,0.000	
QDOT	740,001,140,0.000,741,001,141,0.000	
QDOT	741,001,141,0.000,74	

ITEM	QTY	UNIT	DESCRIPTION	PRICE	TOTAL	REMARKS
RAD 757,001,509,0.417,758,001,510,0.000						
FACTOR .77			RM20A SUPPORT STRUCTURE + TORQUE BOX RERADIATION			
RAD 759 749 1 139.1 760 750 1 144.2						
FACTOR 59.9			BODY SECTION 09X			
RAD 761 091 1 .617 762 092 1 .754 763 093 1 .754 764 094 1 .762						
FACTOR 0.77			FWD BLKHD			
RAD 765,001,740,102.2,766,001,741,122.8,767,001,742,140.8						
RAD 768,001,743,316.8,769,001,744,331.1,770,001,745,089.7						
FACTOR 144.0			AFT BULKHEAD			
RAD 772,001,430,.0736,773,001,431,0.569,774,001,432,1.006						
RAD 775,001,433,0.085,776,001,434,0.151,777,001,435,0.249						
RAD 778,001,436,0.094,779,001,437,0.212						
FACTOR 176.2			AFT SKIRT - IN			
RAD 780,001,501,0.400,781,001,502,0.782,001,503,0.496						
RAD 783,001,504,0.427,784,001,505,0.787,001,508,0.355						
RAD 788,001,509,0.510,789,001,510,0.386,790,001,511,0.287						
FACTOR 21.0			BODY SECTION 49X			
RAD 791 491 1 .612 792 492 1 .747 793 493 1 .747 794 494 1 .763						
FACTOR 84.6			SOLAR ARRAY EXT 19X			
RAD 795 191 1 .650 796 192 1 .790 797 193 1 .790 798 194 1 .395						
FACTOR 1.0			SOLAR ARRAY EXT 29X 39X			
RAD 799 291 1 127.9 800 292 1 169.7						
RAD 801 293 1 173.4 802 294 1 088.5						
RAD 803 391 1 065.2 804 392 1 089.3						
RAD 805 393 1 086.7 806 394 1 046.1						
FACTOR .86			RM208 SUN SHIELD TO AG TEFLON STRIP			
RAD 807 1002 119 7.06 808 1003 219 7.24						
RAD 809 1004 319 8.54 810 1005 419 14.24						
FACTOR .86			RM20R SUN SHIELD TO SOLAR ARRAY			
RAD 811 1001 291 08.63 812 1001 191 08.33 913 1002 091 00.81						
RAD 814 1002 101 02.77 815 1003 201 03.72 416 1004 301 04.38						
RAD 817 1005 401 0.649 818 1005 491 00.77 314 1006 501 12.80						
FACTOR .88			RM20R SUN SHIELD TO SPACE			
RAD 821 1001 1 53.46 822 1002 1 43.55 823 1003 1 44.69						
RAD 824 1004 1 52.67 825 1005 1 87.86 826 1006 1 76.40						
FACTOR .78			AG TEFLON STRIP TO SPACE			
RAD 827 119 1 23.98 839 219 1 22.44						
RAD 840 319 1 24.54 847 419 1 37.58						
FACTOR .88			RM208 EARTH SHIELD TO SPACE			
RAD 828 1011 1 104.0 829 1012 1 101.3 830 1013 1 094.8						
RAD 831 1014 1 103.7 832 1015 1 158.8 833 1016 1 191.9						
FACTOR .7396			RM208 EARTH SHIELD TO S/C ACCESS PANEL			
RAD 834 1012 109 26.9 835 1013 209 25.2 836 1014 309 27.0						

ITEM	DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE	REMARKS
RAD 837	1015 409 42.2 838 1016 509 33.1				
FACTOR 1.0	FORWARD BULKHEAD INSULATION				
RAD 841	123, 740, 023.2, 842, 131, 741.168.8, 843, 132, 742, 208.8				
RAD 844	133, 743, 051.2, 845, 134, 744, 048.9, 846, 135, 745, 14.6				
RAD 849	125 740 23.2 850 127 740 23.2				
FACTOR 1.0	AFT BULKHEAD				
RAD 848	437, 447, 11.90				E = 0.05
FACTOR 1.0	RM-208 SENSOR				
COND 851	810 820 .01982:3 801 -8100820 1:				
COND 852	810 821 .01982:3 801 -8100821 1:				
COND 853	811 812 .05470:3 801 -8110812 1:				
COND 854	813 814 .05000:3 802 -8130814 1:				
COND 855	810 811 .01300 856 812 813 2.7700 857 814 815 3.7100				
COND 858	815 816 6.1000 859 816 817 1.4242				
COND 860	817 1.00:3 280 7001 1: RM 208 DETECTOR HEAT DISSIPATION				
RAD 861	812 820 521. 862 814 821 474. 863 810 893 7.20				
QDOT 864	822 1.7748 865 813 0.8874 866 817 3.30				
COND 867	893 810 .1515:3 800 -8930810 1:				
COND 868	810 814 .0303 869 813 824 .0433				
QDOT 870	823 34.80 871 824 0.000 872 824 1.706				
COND 873	820 822 3.310 875 821 822 3.310 880 822 823 5.750				
RAD 886	001 823 1815.				
QDOT 892	824 0.8874 893 811 1.706				
COND 894	825 845 .380 895 845 830 .0186 896 830 814 .0186				
COND 897	893 433 2.490 898 893 434 1.303				
FACTOR 3.413	ZENER DIODE DISSIPATION				
QDOT 901	981, .0953:3, 8, 7001, 1:				(2/21 = 0.0953)
QDOT 902	982, .0953:3, 8, 7001, 1:				(2/21 = 0.0953)
QDOT 903	983, .0953:3, 8, 7001, 1:				(2/21 = 0.0953)
QDOT 904	984, .0476:3, 8, 7001, 1:				(1/21 = 0.0476)
QDOT 905	985, .0953:3, 8, 7001, 1:				(2/21 = 0.0953)
QDOT 906	986, .0953:3, 8, 7001, 1:				(2/21 = 0.0953)
QDOT 907	987, .0953:3, 8, 7001, 1:				(1/21 = 0.0476)
QDOT 908	988, .0476:3, 8, 7001, 1:				(2/21 = 0.0953)
QDOT 909	989, .0953:3, 8, 7001, 1:				(2/21 = 0.0953)
QDOT 910	990, .0953:3, 8, 7001, 1:				(2/21 = 0.0953)
QDOT 911	991, .0953:3, 8, 7001, 1:				(1/21 = 0.0476)
QDOT 912	992, .0476:3, 8, 7001, 1:				(1/21 = 0.0476)
FACTOR 1.0	CONDUCTION STRAP FOR RM208 COMMAND PROCESSOR				
COND 913	929 900 0.90 914 930 900 0.30 915 931 900 0.30				
COND 916	932 900 0.30 917 933 900 0.30				
COND 918	934 900 0.30 919 935 900 0.30				
COND 920	900 434 1.50 921 900 439 3.20				

COND 922,922,929,3.676,923,923,930,1282,924,924,931,0.495	RM208 CPU 00020922
COND 925,925,932,0.495,926,926,933,0.495,927,927,934,1.406	RM208 CPU 00020923
COND 928,928,935,1.724,929,929,930,11.88,930,930,931,11.88	RM208 CPU 00020925
COND 931,931,932,11.88,932,932,933,11.88,933,933,934,11.88	RM208 CPU 00020928
COND 934,934,935,20.53,935,929,418,5.000,936,930,418,0.562	RM208 CPU 00020931
COND 937,931,418,0.562,938,932,418,0.562,939,933,418,0.562	RM208 CPU 00020934
COND 940,934,418,2.200,941,935,418,2.200	RM208 CPU 00020937
COND 942,922,3.413:3,92,7001,1:	RM208 CPU 00020940
COND 943,923,3.413:3,93,7001,1:	RM208 CPU 00020942
COND 944,924,3.413:3,94,7001,1:	RM208 CPU 00020946
COND 945,925,3.413:3,95,7001,1:	RM208 CPU 00021049
COND 946,926,3.413:3,96,7001,1:	RM208 CPU 00021091
COND 947,927,3.413:3,97,7001,1:	RM208 CPU 00021094
COND 948,928,3.413:3,98,7001,1:	RM208 CPU 00021101
COND 993,929,318,1.874,994,930,318,0.562	RM208 CPU 00021104
COND 996,932,318,0.562,997,933,318,0.562	RM208 CPU 00021108
COND 998,934,318,1.167,999,935,318,1.167	RM208 CPU 00021111
COND 981,981,251,.88	RM208 CPU 00021114
COND 982,982,252,.88	RM208 CPU 00021117
COND 983,983,253,.88	RM208 CPU 00021120
COND 984,984,254,.44	
COND 985,985,351,.88	
COND 986,986,352,.88	
COND 987,987,353,.88	
COND 988,988,354,.44	
COND 989,989,451,.88	
COND 990,990,452,.88	
COND 991,991,453,.88	
COND 992,992,454,.44	
COND 1046,991,141,2.508,1047,992,147,2.508,1048,993,142,2.508	
COND 1049,994,149,2.050	
COND 1091,991,119,0.230,1092,991,992,0.115,1093,992,0.115	
COND 1094,993,994,0.115,1095,994,120,0.146	
COND 1101,101,119,0.354,1102,101,102,0.177,1103,132,103,0.177	
COND 1104,103,104,0.177,1105,104,120,0.224,1106,120,105,0.355	
COND 1107,105,106,0.230,1108,106,107,0.230,1109,107,108,0.230	
COND 1110,108,121,0.460,1111,121,109,0.355,1112,109,110,0.177	
COND 1113,110,111,0.177,1114,111,112,0.177,1115,112,119,0.355	
COND 1116,113,119,0.323,1117,113,122,0.323,1118,114,119,0.323	
COND 1119,114,122,0.323,1120,115,120,0.323,1121,115,124,0.323	

FACTOR 1.0 RM-208 COMMAND PROCESSOR UNIT
 CURVE 92 Q. SERVO ELECTROICS71100322
 CURVE 93 Q. TEST MONITOR 71100323
 CURVE 94 Q. ANALOG OUTPUT 71100324
 CURVE 95 Q. ADC/MUX 71100325
 CURVE 96 Q. CENTRAL PRO.UNIT71100326
 CURVE 97 Q.SYS CONTROL P.DIS71100327
 CURVE 98 Q. CS+SE P.SUPPLIES 71100328
 RM208 CPU 00020953
 RM208 CPU 00020956
 RM208 CPU 00020958
 RM208 CPU 00020980
 RM208 CPU 00020981
 RM208 CPU 00020982
 RM208 CPU 00020983
 RM208 CPU 00020984
 RM208 CPU 00020985
 RM208 CPU 00020986
 RM208 CPU 00020987
 RM208 CPU 00020988
 RM208 CPU 00020989
 RM208 CPU 00020990
 RM208 CPU 00020991
 RM208 CPU 00020992
 RM208 CPU 00021000
 RM208 CPU 00021046
 RM208 CPU 00021049
 RM208 CPU 00021091
 RM208 CPU 00021094
 RM208 CPU 00021101
 RM208 CPU 00021104
 RM208 CPU 00021108
 RM208 CPU 00021111
 RM208 CPU 00021114
 RM208 CPU 00021117
 RM208 CPU 00021120

ZENER DIODE CONDUCTION TO HP
 SPACECRAFT CONDUCTION

00021123
00021126
00021129
00021132
00021135
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00021269

COND 1122,116,120,0.323,1123,116,124,0.323,1124,117,121,0.323
COND 1125,117,126,0.323,1126,118,121,0.323,1127,119,126,0.323
COND 1128,113,114,64.00,1129,115,116,48.00,1130,117,118,48.00
COND 1131,122,123,0.349,1132,123,124,0.349,1133,124,125,0.349
COND 1134,125,126,0.349,1135,126,127,0.349,1136,122,127,0.349
COND 1137,113,213,0.945,1138,114,214,0.945,1139,115,215,0.945
COND 1140,116,216,0.945,1141,117,217,0.945,1142,119,218,0.945
COND 1143,123,223,0.552,1144,125,225,0.552,1145,127,227,0.552
COND 1146,141,191,1.292,1147,147,192,1.292,1148,142,193,1.292
COND 1149,149,194,0.646
COND 1150,105,205,0.478,1151,106,206,0.530
COND 1152,107,207,0.530,1153,108,208,0.530,1154,109,209,0.425
COND 1155,110,210,0.425,1156,111,211,0.425,1157,112,212,0.425
COND 1162,105,143,0.840,1163,106,143,0.931
COND 1164,107,144,0.931,1165,108,144,0.931,1166,109,145,0.747
COND 1167,110,145,0.747,1168,111,146,0.747,1169,112,146,0.747
COND 1177,113,137,1.660,1178,114,137,1.660,1179,115,138,1.660
COND 1180,116,138,1.660,1181,117,139,1.660,1182,118,139,1.660
COND 1186,096,145,0.423,1187,097,146,0.423,1188,098,146,0.423
COND 1189,096,097,0.255,1190,097,098,0.255
COND 1192,191,192,0.162,1193,192,193,0.162,1194,193,194,0.216
COND 1201,201,219,0.430,1202,201,202,0.214,1203,202,203,0.214
COND 1204,203,204,0.214,1205,204,220,0.272,1206,205,220,0.272
COND 1207,205,206,0.170,1208,206,207,0.170,1209,207,208,0.170
COND 1210,208,221,0.340,1211,209,221,0.272,1212,209,210,0.136
COND 1213,210,211,0.136,1214,211,212,0.136,1215,212,219,0.272
COND 1216,213,219,0.302,1217,213,222,0.302,1218,214,219,0.302
COND 1219,214,222,0.302,1220,215,220,0.302,1221,215,224,0.302
COND 1222,216,220,0.302,1223,216,224,0.302,1224,217,221,0.302
COND 1225,217,226,0.302,1226,218,221,0.302,1227,218,226,0.302
COND 1228,213,214,59.80,1229,215,216,59.80,1230,217,218,59.80
COND 1231,222,223,0.327,1232,223,224,0.327,1233,224,225,0.327
COND 1234,225,226,0.327,1235,226,227,0.327,1236,222,227,0.327
COND 1237,213,313,0.902,1238,214,314,0.902,1239,215,315,0.902
COND 1240,216,316,0.902,1241,217,317,0.902,1242,219,318,0.902
COND 1243,223,323,0.527,1244,225,325,0.527,1245,227,327,0.527
COND 1246,191,291,0.588,1247,192,292,0.588,1248,193,293,0.588
COND 1249,194,294,0.294
COND 1250,205,305,0.456,1251,206,306,0.507
COND 1252,207,307,0.507,1253,208,308,0.507,1254,209,309,0.405
COND 1255,210,310,0.405,1256,211,311,0.405,1257,212,312,0.405
COND 1265,137,131,1.444,1266,131,132,0.722,1267,132,138,1.444
COND 1268,138,133,1.444,1269,133,134,0.722,1270,134,139,1.444

COND	1271, 139, 135, 1.444, 1272, 135, 136, 0.722, 1273, 136, 137, 1.444	00021272
COND	1274, 123, 131, 0.394, 1275, 123, 132, 0.394, 1276, 125, 133, 0.394	00021275
COND	1277, 125, 134, 0.394, 1278, 127, 135, 0.394, 1279, 127, 136, 0.394	00021278
COND	1280 131 141 1.250 1281 132 142 1.250 1282 133 143 2.500	00021280
COND	1283, 134, 144, 2.500, 1284, 135, 145, 2.500, 1285, 136, 146, 2.500	00021284
COND	1286 131 147 1.250 1287 132 149 1.250	00021286
COND	1292 291 292 0.324 1293 292 293 0.324 1294 293 294 0.432	00021292
COND	1301, 319, 301, 0.470, 1302, 301, 302, 0.234, 1303, 302, 303, 0.234	00021302
COND	1304, 303, 304, 0.234, 1305, 304, 320, 0.298, 1306, 320, 305, 0.298	00021305
COND	1307, 305, 306, 0.186, 1308, 306, 307, 0.186, 1309, 307, 308, 0.186	00021308
COND	1310, 308, 321, 0.372, 1311, 321, 309, 0.298, 1312, 309, 310, 0.149	00021311
COND	1313, 310, 311, 0.149, 1314, 311, 312, 0.149, 1315, 312, 319, 0.298	00021314
COND	1316, 313, 319, 0.330, 1317, 313, 322, 0.330, 1318, 314, 319, 0.330	00021317
COND	1319, 314, 322, 0.330, 1320, 315, 320, 0.330, 1321, 315, 324, 0.330	00021320
COND	1322, 316, 320, 0.330, 1323, 316, 324, 0.330, 1324, 317, 321, 0.330	00021323
COND	1325, 317, 326, 0.330, 1326, 318, 321, 0.330, 1327, 318, 326, 0.330	00021326
COND	1328, 313, 314, 65.50, 1329, 315, 316, 65.50, 1330, 317, 318, 65.50	00021329
COND	1331, 322, 323, 0.357, 1332, 323, 324, 0.357, 1333, 324, 325, 0.357	00021332
COND	1334, 325, 326, 0.357, 1335, 326, 327, 0.357, 1336, 327, 322, 0.357	00021335
COND	1337, 313, 413, 0.681, 1338, 314, 414, 0.681, 1339, 315, 415, 0.681	00021338
COND	1340, 316, 416, 0.681, 1341, 317, 417, 0.681, 1342, 318, 418, 0.681	00021341
COND	1343, 323, 423, 0.397, 1344, 325, 425, 0.397, 1345, 327, 427, 0.397	00021344
COND	1346 291 391 0.588 1347 292 392 0.588 1348 293 393 0.588	00021346
COND	1349 294 394 0.294	00021349
COND	1350 305 405 0.344 1351 306 406 0.382	00021350
COND	1352, 307, 407, 0.382, 1353, 308, 408, 0.382, 1354, 309, 409, 0.306	00021353
COND	1355, 310, 410, 0.306, 1356, 311, 411, 0.306, 1357, 312, 412, 0.306	00021356
COND	1392 391 392 0.162 1393 392 393 0.162 1394 393 394 0.216	00021392
COND	1401 401 419 0.648 1402 401 402 0.324 1403 402 403 0.324	00021401
COND	1404 403 404 0.324 1405 404 420 0.411 1406 420 405 0.456	00021404
COND	1407, 405, 406, 0.285, 1408, 406, 407, 0.285, 1409, 407, 408, 0.285	00021408
COND	1410, 408, 421, 0.570, 1411, 421, 409, 0.456, 1412, 409, 410, 0.228	00021411
COND	1413, 410, 411, 0.228, 1414, 411, 412, 0.228, 1415, 412, 419, 0.456	00021414
COND	1416, 413, 419, 0.506, 1417, 413, 422, 0.506, 1418, 414, 419, 0.506	00021417
COND	1419, 414, 422, 0.506, 1420, 415, 420, 0.506, 1421, 415, 424, 0.506	00021420
COND	1422, 416, 420, 0.506, 1423, 416, 424, 0.506, 1424, 417, 421, 0.506	00021423
COND	1425, 417, 426, 0.506, 1426, 418, 421, 0.506, 1427, 418, 426, 0.506	00021426
COND	1428, 413, 414, 100.0, 1429, 415, 416, 100.0, 1430, 417, 418, 100.0	00021429
COND	1431, 422, 423, 0.547, 1432, 423, 424, 0.547, 1433, 424, 425, 0.547	00021432
COND	1434, 425, 426, 0.547, 1435, 426, 427, 0.547, 1436, 427, 422, 0.547	00021435
COND	1437, 413, 448, 1.130, 1438, 414, 448, 1.130, 1439, 415, 438, 1.130	00021438
COND	1440, 416, 438, 1.130, 1441, 417, 439, 1.130, 1442, 418, 439, 1.130	00021441
COND	1443, 423, 430, 0.658, 1444, 425, 430, 0.658, 1445, 427, 430, 0.658	00021444

COND 1450	405	443	0.570	1451	406	443	0.635	00021450
COND 1452	407	444	0.635	1453	408	444	0.635	00021453
COND 1455	410	445	0.506	1456	411	446	0.506	00021456
COND 1465	448	431	1.444	1466	431	432	0.722	00021466
COND 1468	438	433	1.444	1469	433	434	0.120	00021469
COND 1471	439	435	1.444	1472	435	436	0.722	00021472
COND 1474	430	431	0.394	1475	430	432	0.394	00021475
COND 1477	430	434	0.394	1478	430	435	0.394	00021478
COND 1480	431	441	1.250	1481	432	442	1.250	00021480
COND 1483	434	444	1.250	1484	435	445	2.500	00021484
COND 1486	431	450	1.250	1487	432	449	1.250	00021486
COND 1491	491	419	0.081	1492	491	492	0.041	00021491
COND 1494	493	494	0.041	1495	494	420	0.052	00021494
COND 1502	501	502	0.372	1503	502	503	0.372	00021503
COND 1505	504	505	0.236	1510	508	509	0.236	00021510
COND 1513	510	511	0.236	1514	511	512	0.236	00021514
COND 1546	501	441	0.770	1547	502	450	0.770	00021546
COND 1549	504	449	0.615	1550	505	443	0.490	00021549
COND 1553	508	444	0.490	1554	509	445	0.490	00021554
COND 1555	510	445	0.490	1556	511	446	0.490	00021556
COND 1586	491	441	7.050	1587	492	450	7.050	00021586
COND 1588	493	442	7.050	1589	494	449	5.760	00021588
FACTOR 1.0	DNA-002-1							00021589
QDOT 1600	601	601	3.415	3.239	7001	1		00021600
COND 1601	601	602	17.20	1602	602	417	29.8	00021602
FACTOR 1.0	DNA-002-2							00021602
QDOT 1620	611	611	3.415	3.260	7001	1		00021620
COND 1621	611	612	17.20	1622	612	417	29.8	00021621
FACTOR 3.413	UVR OPTICS COMPARTMENT INT HEAT GENERATION							00021622
QDOT 1801	181	121	3	242	7001	1	1802 182 .121:3 242 7001 1	00021800
QDOT 1803	183	121	3	242	7001	1		00021801
QDOT 1805	185	182	3	242	7001	1	1806 186 .455:3 242 7001 1	00021803
FACTOR 1.0	UVR INTERNAL RADIATION							00021805
RAD 1811	181	182	40.5					00021810
RAD 1812	183	086	2.06					00021811
RAD 1813	184	083	1.00					00021812
RAD 1814	185	083	1.00					00021813
RAD 1815	187	086	5.89					00021814
RAD 1816	185	187	1.16					00021815
RAD 1817	187	081	3.83					00021816
RAD 1818	187	082	2.88					00021817
RAD 1819	187	087	3.61					00021818
RAC 1820	186	085	2.10					00021819
								00021820

REFLECTED SOLAR OFF SUN SHIELD TO AG TEF STRIP									
00021821									
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00021946									
00022000									
00022001									
00022003									
00022005									
00022006									
00022007									
DM - INS									
DM - INS									
DM - INS									
H=200									
UVR CONDUCTION									
1.0									
1831 181 431 10.2 1832 181 436 30.2									
1833 184 186 6.19									
1834 184 181 27.5									
1835 185 184 12.4									
1836 181 187 .0313									
1837 181 183 13.8									
3.415 TAPE RECORDER HEAT DISSIPATION									
1950,950,0.268:3,243,7001,1:1951,951,0.201:3,243,7001,1;									
1952,952,0.091:3,243,7001,1:1953,953,0.056:3,243,7001,1;									
1954,954,0.314:3,243,7001,1:1955,955,0.070:3,243,7001,1;									
1.0 TAPE RECORDER									
1956,950,952,16.1,1957,952,953,33.9,1958,953,956,48.9									
1959,950,951,5.30,1960,951,961,24.4,1961,950,955,3.20									
1962,955,960,17.0,1963,950,959,43.7,1964,950,954,5.30									
1965,954,958,24.4,1966,950,957,4.30									
1967,950,957,.232,1968,950,958,.226,1969,950,960,.313									
1970,950,961,.226									
1972 961 962 .107 1973 958 962 .107									
1932 961 963 .115 1933 958 963 .115									
1971 956 962 .415 1931 956 963 .398									
1974 960 963 .286 1934 957 962 .262									
1982 962 114 23.19									
1984 963 214 19.88									
1983 956 958 .224									
1985,956,961,.224,1986,957,961,.083,1987,957,959,.288									
1988,957,958,.083,1989,958,959,.448,1990,958,960,.087									
1991,959,960,.305,1992,959,961,.448,1993,960,961,.087									
1975,957,131,25.5,1976,957,114,7.30,1977,957,123,3.60									
1978,959,202,8.75,1979,959,132,26.2,1980,959,115,8.70									
1981,960,048,18.2,1994,960,323,6.20,1995,960,314,6.20									
1996,960,302,1.03,1997,958,223,29.2,1998,958,132,9.70									
1999,958,204,1.62,1949,961,201,2.43,1949,961,131,12.2									
1947,961,214,14.6,1946,961,048,7.30,1945,956,214,87.5									
.25 SOLAR									
2001 1001 0.523:3 025 4001 1:2002 1002 0.398:3 025 4001 1:									
2003 1003 0.408:3 025 4001 1:2004 1004 0.481:3 025 4001 1:									
2005 1005 0.803:3 025 4001 1:2006 1006 0.643:3 025 4001 1:									
.75 REFLECTED SOLAR OFF SUN SHIELD TO AG TEF STRIP									
2007 119 .00895:3 025 4001 1:2008 219 .00918:3 025 4001 1:									

QDOT	2009	319	.01082:3	025	4001	1:2020	419	.01805:3	025	4001	1:	00022009
FACTOR	.75		REFLECTED			SOLAR OFF	SUN SHIELD					00022010
QDOT	2010	291	0.0465:3	025	4001	1:2011	191	0.0465:3	025	4001	1:	00022011
QDOT	2012	091	.00903:3	025	4001	1:2013	101	0.0181:3	025	4001	1:	00022012
QDOT	2014	201	0.0242:3	025	4001	1:2015	301	0.0285:3	025	4001	1:	00022014
QDOT	2016	401	0.0422:3	025	4001	1:2017	491	.00387:3	025	4001	1:	00022016
QDOT	2018	501	0.0833:3	025	4001	1:						00022018
FACTOR	.20		SOLAR			EARTH SHIELD		ALPHA=.25X.8				00022020
QDOT	2021	1011	0.722:3	026	4001	1:2022	1012	0.891:3	026	4001	1:	00022021
QDOT	2023	1013	0.833:3	026	4001	1:2024	1014	0.911:3	026	4001	1:	00022023
QDOT	2025	1015	1.396:3	026	4001	1:2026	1016	1.562:3	026	4001	1:	00022025
FACTOR	.688		EARTH			EARTH SHIELD		E=.86X.8				00022030
QDOT	2031	1011	0.722:3	126	4001	1:2032	1012	0.891:3	126	4001	1:	00022031
QDOT	2033	1013	0.833:3	126	4001	1:2034	1014	0.911:3	126	4001	1:	00022033
QDOT	2035	1015	1.396:3	126	4001	1:2036	1016	1.562:3	126	4001	1:	00022035
FACTOR	.09		SOLAR TO AG TEFLON STRIP									00022040
QDOT	2041	119	0.243:3	027	4001	1:2042	219	0.228:3	027	4001	1:	00022041
QDOT	2043	319	0.249:3	027	4001	1:2044	419	0.382:3	027	4001	1:	00022043
FACTOR	0.1275		INTERNAL RADIATION			SOLAR PANEL BAY		.85 X .15				00023000
RAD	3013	401	414	55.8	3014	401	314	10.6	3028	401	415	8.85
RAD	3006	401	315	4.81	3007	401	423	9.72	3008	401	323	4.62
RAD	3009	401	431	44.3	3010	401	432	4.17	3011	401	131	3.74
RAD	3012	401	132	3.83	3016	402	314	11.2	3017	402	214	4.75
RAD	3015	402	414	26.7	3019	402	315	7.69	3020	402	215	4.35
RAD	3018	402	415	15.2	3022	402	323	7.10	3023	402	223	3.61
RAD	3021	402	423	14.9	3025	402	432	13.2	3026	402	131	3.78
RAD	3024	402	431	44.9	3029	403	414	15.0	3032	403	415	26.3
RAD	3027	402	132	3.95	3031	403	214	4.28	3035	403	423	14.8
RAD	3030	403	314	7.56	3034	403	215	4.67	3038	403	431	13.6
RAD	3033	403	315	11.1	3037	403	223	3.57	3041	403	132	3.58
RAD	3036	403	323	7.03	3040	403	131	4.04	3044	404	415	56.7
RAD	3039	403	432	43.7	3043	404	314	4.74	3047	404	323	4.67
RAD	3042	404	414	8.72	3046	404	423	9.82	3050	404	131	3.41
RAD	3045	404	315	10.8	3049	404	432	43.7	3053	301	314	30.3
RAD	3048	404	431	4.31	3052	301	414	10.6	3056	301	315	3.84
RAD	3051	404	132	3.58	3055	301	415	4.81	3059	301	431	8.13
RAD	3054	301	214	8.92	3058	301	323	4.33	3062	301	132	3.68
RAD	3057	301	423	4.62	3061	301	131	6.01	3065	302	214	8.19
RAD	3060	301	432	3.93	3064	302	314	12.2	3068	302	315	6.70
RAD	3063	302	414	11.2	3067	302	415	7.69	3071	302	423	7.10
RAD	3066	302	114	4.18	3070	302	115	3.56	3074	302	431	8.23
RAD	3069	302	215	5.20	3073	302	223	4.93				
RAD	3072	302	323	6.64								

RAD	3075	302	432	6.12	3076	302	131	6.08	3077	302	132	5.04	00023076
RAD	3078	303	414	7.56	3079	303	314	6.59	3080	303	214	5.11	00023079
RAD	3081	303	114	3.50	3082	303	415	11.1	3083	303	315	12.0	00023082
RAD	3084	303	215	8.08	3085	303	115	4.12	3086	303	423	7.03	00023085
RAD	3087	303	323	6.57	3088	303	223	4.88	3089	303	431	6.28	00023088
RAD	3090	303	432	7.86	3091	303	131	5.17	3092	303	132	5.79	00023091
RAD	3093	304	414	4.74	3094	304	314	3.78	3095	304	415	10.8	00023094
RAD	3096	304	315	30.8	3097	304	215	9.04	3098	304	423	4.67	00023097
RAD	3099	304	323	4.37	3100	304	431	4.03	3101	304	432	7.86	00023100
RAD	3102	304	131	3.76	3103	304	132	5.79	3104	201	314	8.92	00023103
RAD	3105	201	214	26.8	3106	201	114	8.84	3107	201	223	3.68	00023106
RAD	3108	201	131	12.8	3109	201	132	3.67	3110	202	414	4.75	00023109
RAD	3111	202	314	8.19	3112	202	214	10.4	3113	202	114	8.06	00023112
RAD	3114	202	415	4.35	3115	202	315	5.20	3116	202	215	5.70	00023115
RAD	3117	202	115	5.11	3118	202	423	3.61	3119	202	323	4.93	00023118
RAD	3120	202	223	5.65	3121	202	123	4.84	3122	202	131	13.0	00023121
RAD	3123	202	132	7.56	3124	202	414	4.28	3125	203	314	5.11	00023124
RAD	3126	203	214	5.60	3127	203	114	5.02	3128	203	415	4.67	00023127
RAD	3129	203	315	8.08	3130	203	215	10.3	3131	203	115	7.95	00023130
RAD	3132	203	423	3.57	3133	203	323	4.88	3134	203	223	5.59	00023133
RAD	3135	203	123	4.80	3136	203	131	7.77	3137	203	132	12.5	00023136
RAD	3138	204	315	9.04	3139	204	215	27.2	3140	204	115	8.96	00023139
RAD	3141	204	223	3.72	3142	204	131	3.88	3143	204	132	12.5	00023142
RAD	3144	101	214	8.84	3145	101	114	29.3	3146	101	115	3.67	00023145
RAD	3147	101	123	4.14	3148	101	131	35.1	3149	102	314	4.18	00023148
RAD	3150	102	214	8.06	3151	102	114	11.6	3152	102	315	3.56	00023151
RAD	3153	102	215	5.11	3154	102	115	6.41	3155	102	223	4.84	00023154
RAD	3156	102	123	6.35	3157	102	131	35.7	3158	102	132	8.21	00023157
RAD	3159	103	314	3.50	3160	103	214	5.02	3161	103	114	6.30	00023160
RAD	3162	103	315	4.12	3163	103	215	7.95	3164	103	115	11.5	00023163
RAD	3165	103	223	4.80	3166	103	123	6.29	3167	103	131	8.46	00023166
RAD	3168	103	132	34.8	3169	104	114	3.61	3170	104	215	8.96	00023169
RAD	3171	104	115	29.8	3172	104	123	4.18	3173	104	132	34.8	00023172
FACTOR	.7225												00023174
RAD	3174	414	415	6.74	3175	414	423	4.02	3176	414	431	60.6	00023175
RAD	3177	414	432	8.08	3178	414	131	5.60	3179	414	132	5.63	00023178
RAD	3180	314	431	11.8	3181	314	432	6.57	3182	314	131	8.81	00023181
RAD	3183	314	132	5.92	3184	214	431	5.10	3185	214	432	4.36	00023184
RAD	3186	214	131	18.4	3187	214	132	6.61	3188	114	131	47.7	00023187
RAD	3189	114	132	4.00	3190	415	423	7.11	3191	415	431	8.53	00023190
RAD	3192	415	432	57.5	3193	415	131	5.84	3194	415	132	5.51	00023193
RAD	3195	315	323	4.12	3196	315	431	6.86	3197	315	432	11.7	00023196
RAD	3198	315	131	6.16	3199	315	132	8.69	3200	215	223	3.71	00023199

RAD	3201	215	431	4.53	3202	215	437	5.02	3203	215	131	6.94	00023202
RAD	3204	215	132	18.1	3205	115	123	4.00	3206	115	131	4.24	00023205
RAD	3207	115	132	45.5	3208	423	431	16.1	3209	423	432	15.3	00023208
RAD	3210	423	131	3.84	3211	423	132	3.78	3212	323	431	6.70	00023211
RAD	3213	323	432	6.54	3214	323	131	5.33	3215	323	132	5.22	00023214
RAD	3216	223	131	8.89	3217	223	132	8.62	3218	123	131	10.1	00023217
RAD	3219	123	132	9.53	3220	431	131	19.6	3221	431	132	13.8	00023220
RAD	3222	432	131	13.8	3223	432	132	18.6					00023223
FACTOR	.132				1/(1/.21+(1/.39))	S/A EXT TO FWD BLKHD INS							00023300
RAD	3301	0191	131	66.0	3302	0192	131	84.0					00023301
RAD	3303	0193	132	84.0	3304	0194	132	42.0					00023303
FACTOR	44.72				.44 X .77 X 132	S/A EXT TO FWD BLKHD + RM20A							00023310
RAD	3311	291	741	.27	3312	291	742	.07	3313	291	749	.07	00023311
RAD	3314	291	750	.10									00023314
FACTOR	56.92				.44 X .77 X 168	S/A EXT TO FWD BLKHD + RM20A							00023320
RAD	3321	292	741	.21	3322	292	742	.16	3323	292	749	.06	00023321
RAD	3324	292	750	.07									00023324
FACTOR	56.92				.44 X .77 X 168	S/A EXT TO FWD BLKHD + RM20A							00023330
RAD	3331	293	741	.14	3332	293	742	.20	3333	293	743	.01	00023331
RAD	3334	293	744	.01	3335	293	749	.04	3336	293	750	.05	00023334
FACTOR	28.46				.44 X .77 X 84	S/A EXT TO FWD BLKHD + RM20A							00023340
RAD	3341	294	741	.07	3342	294	742	.20	3343	294	743	.03	00023341
RAD	3344	294	744	.02	3345	294	749	.04	3346	294	750	.04	00023344
FACTOR	22.36				.44 X .77 X 66	S/A EXT TO FWD BLKHD + RM20A							00023350
RAD	3351	391	741	.20	3352	391	742	.09	3353	391	743	.04	00023351
RAD	3354	744	391	.01	3355	391	749	.14	3356	391	750	.07	00023354
FACTOR	28.46				.44 X .77 X 84	S/A EXT TO FWD BLKHD + RM20A							00023360
RAD	3361	392	741	.13	3362	392	742	.10	3363	392	743	.03	00023361
RAD	3364	392	744	.01	3365	392	749	.06	3366	392	750	.05	00023364
FACTOR	28.46				.44 X .77 X 84	S/A EXT TO FWD BLKHD + RM20A							00023370
RAD	3371	393	741	.13	3372	393	742	.17	3373	393	743	.03	00023371
RAD	3374	393	744	.03	3375	393	749	.05	3376	393	750	.04	00023374
FACTOR	14.23				.44 X .77 X 42	S/A EXT TO FWD BLKHD + RM20A							00023380
RAD	3381	394	741	.03	3382	394	742	.06	3383	394	743	.04	00023381
RAD	3384	394	744	.06	3385	394	749	.06	3386	394	750	.05	00023384
C													00024000
C													

[illegible]

* 4115	855	437	1.29	4116	855	501	0.56	4117	855	502	0.56	00024115
* 4118	855	503	0.56	4119	855	509	2.74	4120	855	510	2.51	00024118
* 4121	855	511	1.96	4122	857	437	2.76	4123	857	504	0.69	00024121
* 4124	886	502	0.69	4125	886	503	2.75	4126	886	504	9.94	00024124
* 4127	886	505	21.3	4128	887	437	7.35	4129	888	437	7.05	00024127
* 4130	889	508	12.9	4131	889	509	6.39	4132	889	510	2.53	00024130
* 4133	889	511	0.88	4134	890	437	8.64	4135	890	505	4.79	00024133
* 4136	890	508	2.40	4137	891	437	36.6	4138	891	505	2.06	00024136
* 4139	891	508	1.03	4140	881	501	64.2	4141	882	501	12.6	00024139
* 4142	883	501	56.5	4143	888	501	3.76	4144	882	502	8.48	00024142
* 4145	883	502	19.4	4146	884	502	38.3	4147	888	502	5.14	00024145
* 4148	882	503	5.22	4149	884	503	8.16	4150	885	503	5.78	00024148
* 4151	886	503	3.27	4152	882	504	2.09	4153	884	504	1.69	00024151
* 4154	885	504	5.83	4155	886	504	8.09	4156	885	505	4.24	00024154
* 4157	886	505	7.42	4158	885	508	2.12	4159	886	508	12.9	00024157
* 4160	887	509	1.97	4161	886	509	12.1	4162	887	509	6.56	00024160
* 4163	886	510	8.69	4164	887	510	17.8	4165	887	511	88.5	00024163
* 4166	835	508	3.10									00024166

C	FACTOR	.694	(.77)(.90)	208	MLI - S/C	80DY
	RAN	4167	853	407	0.73	4168
				853	307	0.53

C	FACTOR	.593	(.77)(.77)	INTRA	208	UVR	MLI
*RAD	4170	831	841	7.09	4171	831	888
*	4173	832	885	4.81	4174	832	842
*	4176	834	843	0.95	4177	834	890
*	4179	834	892	8.24	4180	834	837
*	4182	834	838	1.97	4183	834	888
*	4185	835	890	3.54	4186	835	885
*	4188	836	886	4.35	4189	836	887
*	4191	836	888	3.00	4192	836	891
*	4194	836	892	3.50	4195	837	886
*	4197	837	857	2.45	4198	838	891
*	4200	838	887	3.00	4201	838	891
*	4203	838	892	1.05	4204	839	886
*	4206	840	885	0.63	4207	840	857
*	4209	840	888	8.85	4210	840	891
*	4212	840	892	0.79	4213	841	857
*	4215	842	885	0.23	4216	842	834
*	4218	842	887	6.75	4219	842	891
*	4221	842	892	0.68	4222	843	886
*	4224	843	834	0.95	4225	854	890
*	4227	887	890	8.82	4228	887	892

* 4230	888	890	8.82	4231	888	891	8.22	4232	888	892	5.68	00024230
* 4233	890	891	7.76	4234	890	892	25.0	4235	082	083	10.0	00024233
* 4236	082	085	8.33	4237	082	088	14.2	4238	855	899	6.36	00024236
* 4239	855	085	0.95	4240	855	086	5.30	4241	856	848	79.0	00024239
* 4242	887	898	2.44									00024240
C												
FACTOR 1. SIGNAL CONDITIONER RADIATOR												
RAD	4243	845	434	.136	4244	845	435	.123	4245	845	508	9.83
RAD	4246	845	509	1.62	4247	845	510	.295	4248	845	511	.098
RAD	4249	845	846	11.3								00024246
C												
FACTOR .810 (.9)(.90) AFT SKIRT - AFT BLKHD												
*RAD	4250	431	501	4.50	4251	431	502	22.5	4252	431	503	12.4
* 4253	431	504	4.50	4254	431	505	1.13	4255	431	509	1.13	00024251
* 4256	431	510	1.58	4257	432	502	15.2	4258	432	503	45.6	00024253
* 4259	432	504	47.5	4260	432	505	13.6	4261	432	509	1.91	00024256
* 4262	432	510	2.04									00024259
C												
FACTOR .225 (.9)(.25) AFT SKIRT - AFT BLKHD & TUNNEL												
*RAD	4266	433	502	1.83	4267	433	503	3.76	4268	433	504	11.8
* 4269	433	505	32.0	4270	433	509	0.91	4271	433	510	0.91	00024263
* 4272	434	503	1.31	4273	434	504	1.84	4274	434	505	2.88	00024266
* 4275	434	508	39.3	4276	434	509	14.0	4277	434	510	4.80	00024269
* 4278	434	511	1.84	4279	435	503	1.77	4280	435	504	1.78	00024272
* 4281	435	508	14.5	4282	435	509	42.4	4283	435	510	39.5	00024275
* 4284	435	511	13.6	4285	436	503	1.19	4286	436	504	.892	00024278
* 4287	436	508	1.49	4288	436	509	3.36	4289	436	510	10.4	00024281
* 4290	436	511	26.8	4291	430	503	3.06	4292	430	504	3.06	00024284
* 4293	430	505	1.46	4294	430	508	1.46	4295	430	509	3.06	00024287
* 4296	430	510	3.62	4297	430	511	1.46					00024290
C												
FACTOR .81 (.9)(.9) AFT SKIRT - AFT SKIRT & CURTAIN												
*RAD	4301	505	437	9.52	4302	508	437	4.76	4303	501	502	1.67
* 4304	501	503	1.57	4305	501	504	1.46	4306	501	505	1.25	00024298
* 4307	502	503	4.76	4308	502	504	4.66	4309	502	505	4.45	00024299
* 4310	502	508	1.06	4311	502	509	1.06	4312	503	504	4.31	00024301
* 4313	503	505	4.79	4314	503	508	2.09	4315	503	509	4.85	00024304
* 4316	503	510	4.82	4317	504	505	4.76	4318	504	508	1.05	00024307
* 4319	504	509	4.87	4320	504	510	4.80	4321	504	511	3.14	00024310
* 4322	505	510	1.06	4323	505	511	1.06	4324	508	509	4.76	00024313
* 4325	508	510	4.24	4326	508	511	5.37	4327	509	510	0.98	00024316
* 4328	509	511	4.94	4329	510	511	7.12					00024319
C												

FACTOR .29	(.44)(.66)	208 MOUNTING BRACKET - BLKHD	
RAD 4335 893 431 2.25 4336 893 432 17.2			00024331
FACTOR .11	(.44)(.25)	208 MOUNTING BRACKET - BLKHD & TUNNEL	00024335
RAD 4337 893 433 28.8 4338 893 434 15.2 4339 893 435 3.95			00024336
RAD 4340 893 436 1.49 4341 893 430 15.5			00024337
FACTOR .406	(.44)(.9)	208 MOUNTING BRACKET - AFT SKIRT	00024338
RAD 4342 893 501 1.67 4343 893 502 5.87 4344 893 503 5.03			00024340
RAD 4345 893 504 1.48 4346 893 509 .807 4347 893 510 3.66			00024341
RAD 4348 893 511 3.14			00024342
FACTOR .338	(.44)(.77)	208 MOUNTING BRACKET - UVR & 208 MLI	00024343
RAD 4349 893 085 5.25 4350 893 086 14.8 4351 893 835 1.19			00024345
FACTOR 1.	SIG COND WIRE SPREADER BRACKET (E = .9) - S/C		00024346
RAD 4355 846 434 0.43 4356 846 435 0.43 4357 846 508 14.4			00024347
RAD 4358 846 509 3.60 4359 846 510 1.03			00024348
FACTOR .5	EST HOT CASE	10 DEG CONE	00024349
QDNT 4371 430 10.68			00024350
QDNT 4372 431 10.74			00024351
QDNT 4373 432 10.19			00024355
QDNT 4374 433 04.76			00024358
QDNT 4375 434 11.81			00024360
QDNT 4376 435 23.39			00024370
QDNT 4377 436 06.21			00024371
QDNT 4378 437 11.44			00024372
QDNT 4381 501 07.87			00024373
QDNT 4382 502 06.59			00024374
QDNT 4383 503 08.69			00024375
QDNT 4384 504 09.06			00024376
QDNT 4385 505 11.62			00024377
QDNT 4386 508 22.49			00024378
QDNT 4387 509 44.81			00024381
QDNT 4388 510 34.47			00024382
QDNT 4389 511 12.32			00024383
FACTOR 0.5	DIRECT & REFLECTED SOLAR BY RADIOSITY		00024384
QDNT 4391 081 7.822 4392 082 15.20 4393 083 2.731 4394 084 .9576	APPROXIMATE MAX SOLAR CASE	10 DEG CONE	00024385
QDNT 4395 085 4.799 4396 086 13.79 4397 087 5.692 4398 088 5.364			00024386
*QDNT 4400 831 .0712 4401 832 .2673 4402 833 6.867 4403 834 26.24			00024387
* 4404 835 2.403 4405 836 .9491 4406 837 1.448 4407 838 .2551			00024388
			00024389
			00024394
			00024395
			00024398
			00024399
			00024400
			00024404

* 4408 839 2.473 4409 840 .1451 4410 841 .1721 4411 842 .0954	00024408
* 4412 843 .1293 4413 844 18.31 4414 845 .5299 4415 846 .3013	00024412
* 4416 849 .0790 4417 850 .5600 4418 851 .4740 4419 852 .2020	00024416
* 4420 853 .4485 4421 854 .4020 4422 855 .2394 4423 857 6.973	00024420
* 4424 886 14.95 4425 887 2.470 4426 888 1.416 4427 889 .0984	00024424
* 4428 890 3.350 4429 891 1.958 4430 892 11.15	00024428
C FACTOR .00521 .770 E/144 EARTH EMISSION	00024429
QDOT 4430 831 488.0 4431 833 2270. 4432 834 172.0 4433 836 836.0	00024430
QDOT 4434 837 2280. 4435 838 232.0 4436 839 667.0 4437 840 268.0	00024431
QDOT 4438 841 741.0 4439 842 160.0 4440 843 462.0 4441 844 360.0	00024434
QDOT 4443 849 751.0 4444 850 1092. 4445 851 928.0	00024438
QDOT 4446 852 2850. 4447 853 471.0 4448 854 865.0 4449 857 715.0	00024443
C FACTOR .00625 .9/144 EARTH EMISSION	00024446
QDOT 4442 845 470. SIGNAL COND RADIATOR	00024447
QDOT 4450 846 470. WIRE SPREADER BRACKET	00024448
C FACTOR .77 RM 208 AND UVR MLI - SPACE	00024449
*RAD 4456 081 001 224. 4457 082 001 67.3 4458 083 001 9.65	00024450
* 4459 084 001 5.06 4460 085 001 3.18 4461 086 001 92.1	00024451
* 4462 087 001 44.9 4463 088 001 47.8	00024455
* 4465 831 001 67.0 4466 832 001 25.1 4467 833 001 88.4	00024456
* 4468 834 001 43.0 4469 835 001 30.6 4470 836 001 70.0	00024459
* 4471 837 001 136. 4472 838 001 16.3 4473 839 001 38.6	00024462
* 4474 840 001 11.0 4475 841 001 35.8 4476 842 001 3.48	00024465
* 4477 843 001 24.7 4478 844 001 46.9 4479 849 001 70.9	00024466
* 4480 850 001 42.6 4481 851 001 36.1 4482 852 001 53.5	00024471
* 4483 853 001 26.1 4484 854 001 17.2 4485 855 001 13.0	00024474
* 4486 857 001 54.5 4487 886 001 13.1 4488 887 001 3.44	00024477
* 4489 888 001 0.00 4490 889 001 14.4 4491 890 001 21.8	00024480
* 4492 892 001 38.4	00024483
FACTOR .9	00024486
RAD 4493 845 001 33.0 SIGNAL CONDITIONER RADIATOR - SPACE	00024488
RAD 4494 846 001 21.6 SIGNAL CONDITIONER WIRE BRACKET - SPACE	00024490
FACTOR .44	00024491
RAD 4495 893 001 13.4 RM 208 MOUNTING BRACKET - SPACE	00024493
C FACTOR .015 .015 E EFF	00024494
RAD 4521 831 824 118. 4522 832 824 85.8 4523 833 824 88.4	00024495
RAD 4524 834 824 104. 4525 835 824 88.4	00024496
FACTOR .015 .015 E EFF	00024519
RAD 4526 836 813 145. 4527 837 813 145. ITHA HOUSING MLI	00024520
	00024521
	00024524
	00024525
	00024526

RAD	5078	307	416	7.56	5079	307	316	6.59	5080	307	216	5.11	00025079
RAC	5081	307	116	3.50	5082	307	417	11.1	5083	307	317	12.0	00025082
RAD	5084	307	217	8.08	5085	307	117	4.12	5086	307	425	7.03	00025085
RAD	5087	307	325	6.57	5088	307	225	4.88	5089	307	433	6.29	00025088
RAD	5090	307	434	7.86	5091	307	133	5.17	5092	307	134	5.79	00025091
RAD	5093	308	416	4.74	5094	308	316	3.78	5095	308	417	10.8	00025094
RAD	5096	308	317	30.8	5097	308	217	9.04	5098	308	425	4.67	00025097
RAD	5099	308	325	4.37	5100	308	433	4.03	5101	308	434	7.86	00025100
RAD	5102	308	133	3.76	5103	308	134	5.79	5104	205	316	8.92	00025103
RAD	5105	205	216	26.8	5106	205	116	8.84	5107	205	225	3.68	00025106
RAD	5108	205	133	12.8	5109	205	134	3.67	5110	206	416	4.75	00025109
RAD	5111	206	316	8.19	5112	206	216	10.4	5113	206	116	8.06	00025112
RAD	5114	206	417	4.35	5115	206	317	5.23	5116	206	217	5.70	00025115
RAD	5117	206	117	5.11	5118	206	425	3.61	5119	206	325	4.93	00025118
RAD	5120	206	225	5.65	5121	206	125	4.84	5122	206	133	13.0	00025121
RAD	5123	206	134	7.56	5124	207	416	4.28	5125	207	316	5.11	00025124
RAD	5126	207	216	5.60	5127	207	116	5.04	5128	207	417	4.67	00025127
RAD	5129	207	317	8.08	5130	207	217	10.3	5131	207	117	7.95	00025130
RAD	5132	207	425	3.57	5133	207	325	4.88	5134	207	225	5.59	00025133
RAD	5135	207	125	4.80	5136	207	133	7.77	5137	207	134	12.5	00025136
RAD	5138	208	317	9.04	5139	208	217	27.2	5140	208	117	8.96	00025139
RAD	5141	208	225	3.72	5142	208	133	3.88	5143	208	134	12.5	00025142
RAD	5144	105	216	8.84	5145	105	116	29.3	5146	105	117	3.67	00025145
RAD	5147	105	125	4.14	5148	105	133	35.1	5149	106	316	4.18	00025148
RAD	5150	106	216	3.06	5151	106	116	11.6	5152	106	317	3.56	00025151
RAD	5153	106	217	5.11	5154	106	117	6.41	5155	106	225	4.84	00025154
RAD	5156	106	125	6.35	5157	106	133	35.7	5158	106	134	8.21	00025157
RAD	5159	107	316	3.50	5160	107	216	5.02	5161	107	116	6.30	00025160
RAD	5162	107	317	4.12	5163	107	217	7.95	5164	107	117	11.5	00025163
RAD	5165	107	225	4.80	5166	107	125	6.29	5167	107	133	8.46	00025166
RAD	5168	107	134	34.8	5169	108	116	3.61	5170	108	217	8.96	00025169
RAD	5171	108	117	29.8	5172	108	125	4.18	5173	108	134	34.8	00025172
RAD	5174	416	417	6.74	5175	416	425	4.02	5176	416	433	60.6	00025175
RAD	5177	416	434	8.08	5178	416	133	5.60	5179	416	134	5.63	00025178
RAD	5180	316	433	11.8	5181	316	434	6.57	5182	316	133	8.81	00025181
RAD	5183	316	134	5.92	5184	216	433	5.10	5185	216	434	4.36	00025184
RAD	5186	216	133	13.4	5187	216	134	6.61	5188	116	133	47.7	00025187
RAD	5189	116	134	4.00	5190	417	425	7.11	5191	417	433	8.53	00025190
RAD	5192	417	434	57.5	5193	417	133	5.84	5194	417	134	5.51	00025193
RAD	5195	317	325	4.12	5196	317	433	6.86	5197	317	434	11.7	00025196
RAD	5198	317	133	6.16	5199	317	134	8.69	5200	217	225	3.71	00025199
RAD	5201	217	433	4.53	5202	217	434	5.02	5203	217	133	6.94	00025202
RAD	5204	217	134	18.1	5205	117	125	4.00	5206	117	133	4.24	00025205

RAD	5207	117	134	45.5	5208	425	433	16.1	5209	425	434	15.3	00025208
RAD	5210	425	133	3.84	5211	425	134	3.78	5212	325	433	6.70	00025211
RAD	5213	325	434	6.54	5214	325	133	5.33	5215	325	134	5.22	00025214
RAD	5216	225	133	8.89	5217	225	134	8.62	5218	125	133	10.1	00025217
RAD	5219	125	134	9.53	5220	433	133	19.6	5221	433	134	13.8	00025220
RAD	5222	434	133	13.8	5223	434	134	18.6					00025223
FACTOR	0.298	INTERNAL RADIATION TO AFT BULKHEAD CLOSEOUT 0.85X0.35											
RAD	5510	105	447	1.100	5511	106	447	1.100	5512	107	447	1.190	00025510
RAD	5513	108	447	1.220	5514	116	447	1.420	5515	117	447	1.800	00025514
RAD	5516	125	447	1.140	5517	133	447	14.22	5518	134	447	10.37	00025517
RAD	5519	205	447	3.980	5520	206	447	4.030	5521	207	447	3.830	00025520
RAD	5522	208	447	3.270	5523	216	447	5.760	5524	217	447	5.130	00025523
RAD	5525	225	447	3.810	5526	305	447	11.51	5527	306	447	12.36	00025526
RAD	5528	307	447	8.810	5529	308	447	5.420	5530	316	447	16.67	00025529
RAD	5531	317	447	9.050	5532	325	447	8.910	5533	405	447	17.96	00025532
RAD	5534	406	447	18.85	5535	407	447	7.600	5536	408	447	4.600	00025535
RAD	5537	416	447	24.36	5538	417	447	6.650	5539	425	447	5.450	00025538
FACTOR	.7225	TUNNEL INTERNAL RADIATION											
RAD	5600	123	125	29.0	5601	123	127	29.0	5602	123	125	7.00	00025601
RAD	5603	123	227	7.00	5604	123	130	0.00	5605	125	127	29.0	00025604
RAD	5606	125	223	7.00	5607	125	227	7.00	5608	125	130	0.00	00025607
RAD	5609	127	223	7.00	5610	127	225	7.00	5611	127	130	0.00	00025610
RAD	5612	223	225	29.0	5613	223	227	29.0	5614	223	325	7.00	00025613
RAD	5615	223	327	7.00	5616	223	130	0.00	5617	225	227	29.0	00025616
RAD	5618	225	323	7.00	5619	225	327	7.00	5620	225	130	0.00	00025619
RAD	5621	227	323	7.00	5622	227	325	7.00	5623	227	130	0.00	00025622
RAD	5624	323	325	30.0	5625	323	327	30.0	5626	323	425	8.00	00025625
RAD	5627	323	427	8.00	5628	325	327	30.0	5629	325	423	8.00	00025628
RAD	5630	325	427	8.00	5631	327	423	8.00	5632	327	425	8.00	00025631
RAD	5633	423	425	55.0	5634	423	427	55.0	5635	423	430	35.4	00025634
RAD	5636	425	427	55.0	5637	425	430	35.4	5638	427	430	35.4	00025637
FACTOR	.7225	INTERNAL RADIATION RM-208 RADIATOR BAY											
RAD	6000	409	410	4.07	6001	409	411	4.00	6002	409	412	3.90	00026000
RAD	6003	409	418	55.8	6004	409	318	10.6	6005	409	413	8.85	00026001
RAD	6006	409	319	4.81	6007	409	427	9.72	6008	409	327	4.62	00026004
RAD	6009	409	435	44.3	6010	409	436	4.17	6011	409	135	3.74	00026007
RAD	6012	409	136	3.83	6013	410	411	4.07	6014	410	412	3.90	00026010
RAD	6015	410	418	26.7	6016	410	318	11.2	6017	410	218	4.75	00026013
RAD	6018	410	413	15.2	6019	410	313	7.69	6020	410	213	4.35	00026016
RAD	6021	410	427	14.9	6022	410	327	7.10	6023	410	227	3.61	00026019
RAD	6024	410	435	44.9	6025	410	436	13.2	6026	410	135	3.78	00026022
RAD	6027	410	136	3.95	6028	411	412	3.69	6029	411	418	15.0	00026025
RAD	6030	411	318	7.56	6031	411	218	4.28	6032	411	413	26.3	00026028
													00026031

RAD	6033	411	313	11.1	6034	411	213	4.67	6035	411	427	14.8
RAD	6036	411	327	7.03	6037	411	227	3.57	6038	411	435	13.6
RAD	6039	411	436	43.7	6040	411	135	4.04	6041	411	136	3.58
RAD	6042	412	418	8.72	6043	412	318	4.74	6044	412	13	56.7
RAD	6045	412	313	10.8	6046	412	427	9.82	6047	412	327	4.67
RAD	6048	412	435	4.31	6049	412	436	43.7	6050	412	135	3.91
RAD	6051	412	136	3.58	6052	309	418	10.6	6053	309	318	30.3
RAD	6054	309	218	8.92	6055	309	413	4.81	6056	309	313	3.84
RAD	6057	309	427	4.62	6058	309	327	4.33	6059	309	435	8.13
RAD	6060	309	436	3.93	6061	309	135	6.01	6062	309	136	3.68
RAD	6063	310	418	11.2	6064	310	318	12.2	6065	310	218	8.19
RAD	6066	310	118	4.18	6067	310	413	7.69	6068	310	313	6.70
RAD	6069	310	213	5.20	6070	310	113	3.56	6071	310	427	7.10
RAD	6072	310	327	6.64	6073	310	227	4.93	6074	310	435	8.23
RAD	6075	310	436	6.12	6076	310	135	6.08	6077	310	136	5.04
RAD	6078	311	418	7.56	6079	311	318	6.59	6080	311	218	5.11
RAD	6081	311	118	3.50	6082	311	413	11.1	6083	311	313	12.0
RAD	6084	311	213	8.08	6085	311	113	4.12	6086	311	427	7.03
RAD	6087	311	327	6.57	6088	311	227	4.88	6089	311	435	6.28
RAD	6090	311	436	7.86	6091	311	135	5.17	6092	311	136	5.79
RAD	6093	312	418	4.74	6094	312	318	3.78	6095	312	413	10.8
RAD	6096	312	313	30.8	6097	312	213	9.04	6098	312	427	4.67
RAD	6099	312	327	4.37	6100	312	435	4.03	6101	312	436	7.86
RAD	6102	312	135	3.76	6103	312	136	5.79	6104	209	318	8.92
RAD	6105	209	218	26.8	6106	209	118	8.84	6107	209	227	3.68
RAD	6108	209	135	12.8	6109	209	136	3.67	6110	210	418	4.75
RAD	6111	209	318	6.19	6112	210	218	10.4	6113	210	118	8.06
RAD	6114	210	413	4.35	6115	210	313	5.20	6116	210	213	5.70
RAD	6117	210	113	5.11	6118	210	427	3.61	6119	210	327	4.93
RAD	6120	210	227	5.65	6121	210	127	4.84	6122	210	135	13.0
RAD	6123	210	136	7.56	6124	211	418	4.28	6125	211	318	5.11
RAD	6126	211	218	5.60	6127	211	118	5.02	6128	211	413	4.67
RAD	6129	211	313	8.08	6130	211	213	10.3	6131	211	113	7.95
RAD	6132	211	427	3.57	6133	211	327	4.88	6134	211	227	5.59
RAD	6135	211	127	4.80	6136	211	135	7.77	6137	211	136	12.5
RAD	6138	212	313	9.04	6139	212	213	27.2	6140	212	113	8.96
RAD	6141	212	227	3.72	6142	212	135	3.88	6143	212	136	12.5
RAD	6144	109	218	8.64	6145	109	118	29.3	6146	109	113	3.67
RAD	6147	109	127	4.14	6148	109	135	35.1	6149	110	318	4.18
RAD	6150	110	218	8.06	6151	110	118	11.6	6152	110	313	3.56
RAD	6153	110	213	5.11	6154	110	113	6.41	6155	110	227	4.84
RAD	6156	110	127	6.35	6157	110	135	35.7	6158	110	136	8.21
RAD	6159	111	318	3.50	6160	111	218	5.02	6161	111	118	6.30

*	7110	2001	0740	.385	7111	2001	0741	.508	7112	2001	0742	.913	00027110
*	7113	2001	0743	.554	7114	2001	0744	.215	7115	2001	0745	.262	00027113
*	7116	2002	2037	5.40	7117	2002	2038	8.27	7118	2002	2039	2.27	00027116
*	7119	2002	2041	1.93	7120	2002	2042	4.59	7121	2002	2045	3.76	00027119
*	7122	2002	2046	8.55	7123	2002	2049	6.03	7124	2002	2061	4.65	00027122
*	7125	2002	0740	3.69	7126	2002	0741	2.70	7127	2002	0742	5.59	00027125
*	7128	2002	0743	9.01	7129	2002	0744	12.7	7130	2002	0745	4.52	00027128
*	7131	2003	2037	.088	7132	2003	2038	.221	7133	2003	2039	.046	00027131
*	7134	2003	2041	.002	7135	2003	2042	.044	7136	2003	2045	.047	00027134
*	7137	2003	2046	.028	7138	2003	2049	.025	7139	2003	2061	.094	00027137
*	7140	2003	0740	.137	7141	2003	0741	.044	7142	2003	0742	.297	00027140
*	7143	2003	0743	1.42	7144	2003	0744	2.01	7145	2003	0745	.323	00027143
*	7146	2004	0745	.022	7147	2005	2041	.049	7148	2005	2061	.852	00027146
*	7149	2005	0740	.232	7150	2005	0741	.222	7151	2005	0742	.161	00027149
*	7152	2005	0743	1.98	7153	2005	0744	.127	7154	2006	2046	.280	00027152
*	7155	2006	2049	.056	7156	2007	0740	.132	7157	2007	0741	.132	00027155
*	7158	2007	0742	.755	7159	2007	0743	1.70	7160	2007	0744	2.42	00027158
*	7161	2008	2049	.037	7162	2008	0745	.029	7163	2009	2041	.071	00027161
*	7164	2009	2061	.507	7165	2009	0740	.145	7166	2009	0741	.157	00027164
*	7167	2009	0742	.955	7168	2009	0743	1.01	7169	2009	0744	.088	00027167
*	7170	2014	2038	.008	7171	2014	2039	.001	7172	2014	0740	.009	00027170
*	7173	2014	0742	.044	7174	2014	0743	.450	7175	2014	0744	.608	00027173
*	7176	2014	0745	.065	7177	2022	2036	.024	7178	2022	2037	1.64	00027176
*	7179	2022	2038	1.90	7180	2022	2039	.195	7181	2022	2042	.024	00027179
*	7182	2022	2045	1.09	7183	2022	2046	.157	7184	2022	2049	2.29	00027182
*	7185	2022	2061	1.77	7186	2023	2036	.162	7187	2023	2037	.919	00027185
*	7188	2023	2038	2.16	7189	2023	2039	.198	7190	2023	2045	.450	00027188
*	7191	2023	2049	.864	7192	2023	2061	.234					00027191
FACTOR .376													00027199
(.81)(.47)													00027200
*RAN	7200	2001	2062	.246	7201	2001	2063	.174	7202	2001	0191	.980	00027203
*	7203	2001	0192	.798	7204	2001	0193	.726	7205	2001	0194	.195	00027206
*	7206	2001	0291	.980	7207	2001	0292	.798	7208	2001	0293	.726	00027209
*	7209	2001	0294	.195	7210	2001	0096	.021	7211	2001	0098	.051	00027212
*	7212	2002	2062	.379	7213	2002	2063	.954	7214	2002	0191	3.75	00027215
*	7215	2002	0192	5.32	7216	2002	0193	3.09	7217	2002	0194	.932	00027218
*	7218	2002	0291	3.75	7219	2002	0292	5.32	7220	2002	0293	3.09	00027221
*	7221	2002	0294	.932	7222	2002	2062	.008	7223	2003	2063	.043	00027224
*	7224	2003	0191	.064	7225	2003	0192	.056	7226	2003	0193	.072	00027227
*	7227	2003	0194	.275	7228	2003	0291	.064	7229	2003	0292	.056	00027230
*	7230	2003	0293	.072	7231	2003	0294	.275	7232	2004	2062	.268	00027233
*	7233	2004	2063	.637	7234	2004	0096	.005	7235	2005	2062	.002	00027236
*	7236	2005	0191	.417	7237	2005	0192	.778	7238	2005	0193	1.15	00027239
*	7239	2005	0194	.411	7240	2005	0291	.417	7241	2005	0292	.778	

*	7242	2005	0293	1.15	7243	2005	0294	.411	7244	2007	0191	.023	00027242
*	7245	2007	0192	.066	7246	2007	0193	.227	7247	2007	0194	.095	00027245
*	7248	2007	0291	.023	7249	2007	0292	.066	7250	2007	0293	.227	00027248
*	7251	2007	0294	.095	7252	2008	0262	.177	7253	2008	0263	.433	00027251
*	7254	2009	0262	.006	7255	2009	0191	.267	7256	2009	0192	.436	00027254
*	7257	2009	0193	.549	7258	2009	0194	.165	7259	2009	0291	.267	00027257
*	7260	2009	0292	.436	7261	2009	0293	.549	7262	2009	0294	.165	00027260
*	7263	2009	0098	.003	7264	2014	2063	.219	7265	2022	2063	3.76	00027263
*	7266	2022	0192	.247	7267	2022	0193	.235	7268	2022	0292	.247	00027266
*	7269	2022	0293	.235	7270	2023	2062	.396	7271	2023	2063	3.60	00027269
*	7272	2023	0191	.045	7273	2023	0192	.099	7274	2023	0193	.522	00027272
*	7275	2023	0291	.045	7276	2023	0292	.099	7277	2023	0293	.522	00027275
*	7278	2002	0508	.131	7279	2003	0508	.110	7280	2008	0508	.003	00027278
*	7281	2014	0508	.095	7282	2022	0508	.803	7283	2023	0508	.872	00027281
*	7284	2002	0509	.007	7285	2003	0509	.003	7286	2004	0509	.002	00027284
*	7287	2008	0509	.003	7288	2014	0509	.006	7289	2022	0509	.228	00027287
	7290	2023	0509	.794									00027290
	FACTOR	.648	(.81)(.81)										00027299
*	7300	2001	2050	24.2	7301	2002	2050	6.56	7302	2004	2050	.283	00027300
*	7303	2006	2050	2.07	7304	2008	2050	.117	7305	2022	2050	1.10	00027303
	7306	2023	2050	4.52									00027306
	FACTOR	.688	(.81)(.861)										00027309
*	7310	2002	0106	.393	7311	2002	0107	.797	7312	2002	0108	.688	00027310
*	7313	2002	0109	.033	7314	2002	0206	.171	7315	2002	0207	.328	00027313
*	7316	2002	0208	.291	7317	2002	0209	.015	7318	2002	0306	.124	00027316
*	7319	2002	0307	.233	7320	2002	0308	.291	7321	2002	0309	.011	00027319
*	7322	2002	0406	.120	7323	2002	0407	.218	7324	2002	0408	.197	00027322
*	7325	2002	0409	.011	7326	2003	0106	.355	7327	2003	0107	.636	00027325
*	7328	2003	0108	.352	7329	2003	0109	.011	7330	2003	0206	.184	00027328
*	7331	2003	0207	.300	7332	2003	0208	.184	7333	2003	0209	.006	00027331
*	7334	2003	0306	.001	7335	2003	0307	.228	7336	2003	0308	.149	00027334
*	7337	2003	0309	.005	7338	2003	0406	.001	7339	2003	0407	.229	00027337
*	7340	2003	0408	.155	7341	2003	0409	.005	7342	2004	0108	.002	00027340
*	7343	2004	0109	.012	7344	2004	0209	.007	7345				

*	7373	2009	0406	.077	7374	2009	0407	.008	7375	2014	0105	.008	00027373
*	7376	2014	0106	.253	7377	2014	0107	.364	7378	2014	0108	.183	00027376
*	7379	2014	0109	.005	7380	2014	0205	.006	7381	2014	0206	.150	00027379
*	7382	2014	0207	.216	7383	2014	0208	.118	7384	2014	0209	.075	00027382
*	7385	2014	0305	.006	7386	2014	0306	.130	7387	2014	0307	.181	00027385
*	7338	2014	0308	.106	7389	2014	0309	.005	7390	2014	0405	.007	00027388
*	7391	2014	0406	.384	7392	2014	0407	.196	7393	2014	0408	.123	00027391
*	7394	2014	0409	.007	7395	2020	0407	.038	7396	2022	0106	.176	00027394
*	7397	2022	0107	.803	7398	2022	0108	2.33	7399	2022	0109	.665	00027397
*	7400	2022	0206	.105	7401	2022	0207	.394	7402	2022	0208	1.21	00027400
*	7403	2022	0209	.347	7404	2022	0306	.095	7405	2022	0307	.385	00027403
*	7406	2022	0308	.993	7407	2022	0309	.285	7408	2022	0406	.114	00027406
*	7409	2022	0407	.428	7410	2022	0408	1.07	7411	2022	0409	.309	00027409
*	7412	2023	0106	.013	7413	2023	0107	.156	7414	2023	0108	.078	00027412
*	7415	2023	0109	1.93	7416	2023	0206	.013	7417	2023	0207	.156	00027415
*	7418	2023	0208	1.17	7419	2023	0209	1.07	7420	2023	0306	.013	00027418
*	7421	2023	0307	.078	7422	2023	0308	.833	7423	2023	0309	.885	00027421
*	7424	2023	0406	.013	7425	2023	0407	.078	7426	2023	0408	1.04	00027424
*	7427	2023	0409	1.03									00027427
	FACTOR .615		(.81)(.77)										00027429
	RAD 7430	2009	0505	.009									00027430
			RM20A NODE 2011										00027438
			(.717)(.66)										00027439
	FACTOR .616												00027440
*	7440	2011	2031	.015	7441	2011	2037	.034	7442	2011	2038	.054	00027443
*	7443	2011	2039	.067	7444	2011	2041	.184	7445	2011	2042	.307	00027446
*	7446	2011	2045	.045	7447	2011	2046	.379	7448	2011	2049	.035	00027449
*	7449	2011	2061	.095	7450	2011	0740	.093	7451	2011	0741	.070	00027452
*	7452	2011	0742	.214	7453	2011	0743	.306	7454	2011	0744	.223	00027455
*	7455	2011	0745	.041									00027459
	FACTOR .337		(.717)(.47)										00027460
*	7460	2011	2062	.025	7461	2011	0191	.095	7462	2011	0192	.086	00027463
*	7463	2011	0193	.087	7464	2011	0194	.025	7465	2011	0291	.095	00027466
*	7466	2011	0292	.086	7467	2011	0293	.087	7468	2011	0294	.025	00027469
*	7469	2011	0098	.032									00027479
	FACTOR .582		(.717)(.81)										00027480
	RAD 7480	2011	2050	.512									00027489
			(.717)(.86)										00027490
	FACTOR .616												00027493
*	7490	2011	0106	.024	7491	2011	0107	.022	7492	2011	0206	.012	00027496
*	7493	2011	0207	.010	7494	2011	0306	.009	7495	2011	0307	.008	00027508
*	7496	0211	0406	.008	7497	2011	0407	.008					00027509
			RM20A NODE 2012										00027510
			(.505)(.66)										
	FACTOR .333												
*	7510	2012	2031	.019	7511	2012	2037	.166	7512	2012	2038	.269	

* 7513	2012	2039	.130	7514	2012	2041	.418	7515	2012	2042	.423	00027513
* 7516	2012	2045	.032	7517	2012	2046	.298	7518	2012	2049	.107	00027516
* 7519	2012	2061	.209	7520	2012	0740	.184	7521	2012	0741	.151	00027519
* 7522	2012	0742	.393	7523	2012	0743	.628	7524	2012	0744	.538	00027522
* 7525	2012	0745	.171									00027525
	7525	2012	0745	.171								00027529
	7525	2012	0745	.171								00027530
FACTOR	.238	(.505)	(.471)									00027533
*RAD	7530	2012	2062	.030	7531	2012	0191	.233	7532	2012	0192	.212
* 7533	2012	0193	.214	7534	2012	0194	.058	7535	2012	0291	.233	00027536
* 7536	2012	0292	.212	7537	2012	0293	.214	7538	2012	0294	.058	00027539
* 7539	2012	0098	.114									00027549
	7539	2012	0098	.114								00027550
FACTOR	.408	(.505)	(.81)									00027559
RAD	7550	2012	2050	.256								00027560
FACTOR	.435	(.505)	(.86)									00027563
*RAD	7560	2012	0106	.021	7561	2012	0107	.033	7562	2012	0206	.015
* 7563	2012	0207	.016	7564	2012	0306	.011	7565	2012	0307	.011	00027566
* 7566	2012	0406	.011	7567	2012	0407	.012					00027578
												00027579
												00027580
C	FACTOR	.0198	(.03)	(.66)								00027583
*RAD	7580	2013	2037	.381	7581	2013	2038	.761	7582	2013	2039	.173
* 7583	2013	2061	.613	7584	2013	0740	.509	7585	2013	0741	.280	00027586
* 7586	2013	0742	.857	7587	2013	0743	1.69	7588	2013	0744	2.33	00027589
* 7589	2013	0745	.678	7590	2016	0745	.008	7591	2019	2037	.011	00027592
* 7592	2019	2038	.014	7593	2019	2039	.001	7594	2019	2042	.002	00027595
* 7595	2019	2045	.007	7596	2019	2046	.006	7597	2019	2049	.017	00027598
* 7598	2019	2061	.010	7599	2019	0740	.098	7600	2019	0741	.075	00027601
* 7601	2019	0742	.316	7602	2019	0743	.494	7603	2019	0744	.785	00027604
* 7604	2019	0745	.309	7605	2021	2037	.456	7606	2021	2038	.692	00027607
* 7607	2021	2039	.065	7608	2021	2042	.125	7609	2021	2045	.278	00027610
* 7610	2021	2046	.203	7611	2021	2049	.406	7612	2021	2061	.641	00027613
* 7613	2021	0740	.134	7614	2021	0741	.098	7615	2021	0742	.456	00027616
* 7616	2021	0743	.772	7617	2021	0744	1.09	7618	2021	0745	.397	00027629
												00027630
FACTOR	.0141	(.03)	(.47)									00027633
*RAD	7630	2013	2062	.014	7631	2013	2063	1.25	7632	2013	0191	.305
* 7633	2013	0192	.280	7634	2013	0193	.307	7635	2013	0194	.120	00027636
* 7636	2013	0291	.305	7637	2013	0292	.280	7638	2013	0293	.307	00027639
* 7639	2013	0294	.120	7640	2016	2062	.020	7641	2016	2063	.466	00027642
* 7642	2016	0096	.002	7643	2019	2062	.008	7644	2019	2063	.022	00027645
* 7645	2019	0192	.002	7646	2019	0193	.005	7647	2019	0194	.047	00027648
* 7648	2019	0292	.002	7649	2019	0293	.005	7650	2019	0294	.047	00027651
* 7651	2019	0096	.036	7652	2021	2062	.315	7653	2021	2063	1.18	00027654
* 7654	2021	0192	.120	7655	2021	0193	.226	7656	2021	0194	.072	00027657
* 7657	2021	0292	.120	7658	2021	0293	.226	7659	2021	0294	.072	00027660
* 7660	2021	0096	.046	7661	2013	0508	.094	7662	2013	0509	.008	

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* 7663 2016 0509 .002 7664 2019 0508 .032 7665 2019 0509 .019
  7666 2021 0508 .072 7667 2021 0509 .037
  FACTOR .0243 (.03)(.81)
  RAD 7670 2019 2050 .015 7671 2021 2050 .244
  FACTOR .0258 (.03)(.86)
  *RAD 7680 2013 0105 .007 7681 2013 0106 .397 7682 2013 0107 .640
    * 7683 2013 0108 .442 7684 2013 0109 .026 7685 2013 0205 .004
    * 7686 2013 0206 .182 7687 2013 0207 .275 7688 2013 0208 .201
    * 7689 2013 0209 .013 7690 2013 0305 .003 7691 2013 0306 .136
    * 7692 2013 0307 .198 7693 2013 0308 .148 7694 2013 0309 .011
    * 7695 2013 0405 .003 7696 2013 0406 .133 7697 2013 0407 .187
    * 7698 2013 0408 .143 7699 2013 0409 .011 7700 2016 0109 .006
    * 7701 2016 0209 .003 7702 2016 0309 .002 7703 2016 0409 .002
    * 7704 2019 0106 .016 7705 2019 0107 .056 7706 2019 0108 .121
    * 7707 2019 0109 .063 7708 2019 0206 .008 7709 2019 0207 .028
    * 7710 2019 0208 .056 7711 2019 0209 .031 7712 2019 0306 .007
    * 7713 2019 0307 .022 7714 2019 0308 .044 7715 2019 0309 .024
    * 7716 2019 0406 .007 7717 2019 0407 .023 7718 2019 0408 .045
    * 7719 2019 0409 .026 7720 2021 0106 .065 7721 2021 0107 .159
    * 7722 2021 0108 .225 7723 2021 0109 .104 7724 2021 0206 .034
    * 7725 2021 0207 .081 7726 2021 0208 .112 7727 2021 0209 .054
    * 7728 2021 0306 .029 7729 2021 0307 .066 7730 2021 0308 .090
    * 7731 2021 0309 .044 7732 2021 0406 .032 7733 2021 0407 .071
    7734 2021 0408 .097 7735 2021 0409 .049
  FACTOR .0231 (.03)(.77)
  RAD 7740 2013 0505 .002
  C RM20A NODE 2015
  FACTOR .534 (.81)(.66)
  *RAD 7750 2015 2041 .017 7751 2015 2061 .230 7752 2015 0740 .055
    * 7753 2015 0741 .053 7754 2015 0742 .410 7755 2015 0743 .557
    7756 2015 0744 .036
  FACTOR .381 (.81)(.47)
  *RAD 7760 2015 0191 .110 7761 2015 0192 .190 7762 2015 0193 .288
    * 7763 2015 0194 .096 7764 2015 0291 .110 7765 2015 0292 .190
    7766 2015 0293 .288 7767 2015 0294 .096
  FACTOR .696 (.81)(.86)
  *RAD 7770 2015 0105 .022 7771 2015 0106 .110 7772 2015 0107 .012
    * 7773 2015 0205 .010 7774 2015 0206 .045 7775 2015 0207 .004
    * 7776 2015 0305 .008 7777 2015 0306 .029 7778 2015 0307 .003
    7779 2015 0405 .007 7780 2015 0406 .027 7781 2015 0407 .003
  FACTOR .624 (.81)(.77)
  RAD 7790 2015 0505 .004
  C RM20A NODE 2018

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[illegible]

FACTOR .0009 (.03)(.03)													00300516
RAD	7935	2016	2019	1.17	7936	2016	2021	9.01					00300518
C S/C TO S/C													
FACTOR .635 (.66)(.66)													00300526
*RAD	7941	2031	2061	29.4	7942	2031	0741	16.4	7943	2031	0742	2.05	00300532
*	7944	2031	0743	0.72	7945	2032	2061	2.56	7946	2032	0741	2.43	00300534
*	7947	2033	2061	1.42	7948	2033	0741	2.58	7949	2037	2045	15.0	00300536
*	7950	2037	2049	13.2	7951	2037	0744	1.27	7952	2037	0745	2.27	00300538
*	7953	2038	2045	4.24	7954	2038	2049	0.84	7955	2038	0744	12.15	00300540
*	7956	2038	0745	23.2	7957	2039	2041	10.6	7958	2039	2042	7.45	00300542
*	7959	2039	2045	0.52	7960	2039	0740	6.59	7961	2039	0742	2.25	00300544
*	7962	2039	0743	3.53	7963	2039	0744	5.31	7964	2040	2041	14.17	00300546
*	7965	2040	2061	4.91	7966	2040	0740	4.60	7967	2040	0741	1.71	00300548
*	7968	2040	0742	1.95	7969	2040	0743	1.53	7970	2040	0744	0.51	00300550
*	7971	2041	2042	0.59	7972	2041	2061	17.9	7973	2041	0740	16.3	00300552
*	7974	2041	0741	4.93	7975	2041	0742	10.8	7976	2041	0743	10.28	00300554
*	7977	2041	0744	8.55	7978	2042	0742	0.82	7979	2042	0743	0.94	00300556
*	7980	2042	0744	0.82	7981	2039	2061	2.71	7982	2046	0744	1.22	00300558
FACTOR .145 (.66)(.44) * 1/2													00300560
*RAD	7985	2031	0191	21.0	7986	2031	0192	5.31	7987	2031	0193	3.24	00300564
*	7988	2031	0194	1.87	7989	2032	2062	1.58	7990	2032	0191	29.5	00300566
*	7991	2032	0192	8.31	7992	2032	0193	2.77	7993	2032	0098	5.65	00300568
*	7994	2033	2062	2.73	7995	2033	0191	20.7	7996	2033	0192	2.80	00300570
*	7997	2033	0193	0.92	7998	2033	0098	10.7	7999	2037	2062	3.84	00300572
*	8000	2039	0191	0.97	8001	2039	0192	0.81	8002	2039	0193	5.25	00300574
*	8003	2039	0194	2.02	8004	2040	0191	4.82	8005	2040	0192	0.34	00300576
*	8006	2040	0193	5.03	8007	2040	0194	1.54	8008	2041	0192	6.27	00300578
*	8009	2041	0193	16.3	8010	2041	0194	7.88	8011	2042	0192	0.82	00300580
*	8012	2042	0193	1.17	8013	2043	0191	3.11	8014	2043	0192	2.03	00300582
*	8015	2043	0193	0.63									00300584
*RAD	8385	2031	0291	21.0	8286	2031	0292	5.31	8287	2031	0293	3.24	00300586
*	8388	2031	0294	1.87	8289	2032	0291	29.5					00300566
*	8391	2032	0292	8.31	8292	2032	0293	2.77					00300568
*	8394	2033	0291	2.73	8295	2033	0292	2.80					00300570
*	8397	2033	0293	0.92									00300572
*	8300	2039	0291	0.97	8301	2039	0292	0.81	8302	2039	0293	5.25	00300574
*	8303	2039	0294	2.02	8304	2040	0291	4.82	8305	2040	0292	0.34	00300576
*	8306	2040	0293	5.03	8307	2040	0294	1.54	8308	2041	0292	6.27	00300578
*	8309	2041	0293	16.3	8310	2041	0294	7.88	8311	2042	0292	0.82	00300580
*	8312	2042	0293	1.17	8313	2043	0291	3.11	8314	2043	0292	2.03	00300582
*	8315	2043	0293	0.63									00300584
FACTOR .508 (.66)(.77)													00300586
RAD	8020	2037	2050	3.73	8021	2038	2050	6.72	8022	2039	2050	1.85	00300588
													00300590

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8424	2038	50.5	8425	2039	14.8	8426	2040	9.98	8427	2041	50.0	00300722
8428	2050	80.6										00300724
												00029999
												00030500
END	RELAX	500.5										00030002
	CAP	151.0	152.0	153.0	154.0							00030004
	CAP	155.0	156.0	157.0	158.0	159.0	160.0	161.0				00030006
	CAP	162.0	163.0									00030008
	CAP	251.0	252.0	253.0	254.0							00030010
	CAP	255.0	256.0	257.0	258.0	259.0	260.0	261.0				00030012
	CAP	262.0	263.0									00030014
	CAP	351.0	352.0	353.0	354.0							00030016
	CAP	355.0	356.0	357.0	358.0	359.0	360.0					00030018
	CAP	362.0	363.0									00030020
	CAP	451.0	452.0	453.0	454.0							00030022
	CAP	455.0	456.0	457.0	458.0	459.0	460.0					00030024
	CAP	462.0	463.0									00030026
	CAP	551.0	552.0	553.0	554.0	555.0						00030028
	CAP	556.0	557.0	558.0	559.0	560.0	561.0					00030030
	CAP	562.0	563.0									00030032
	CAP	119.0	120.0	121.0	122.0	124.0	126.0					00030034
	CAP	137.0	138.0	139.0	141.0	142.0	143.0	144.0	145.0	146.0		00030035
	CAP	147.0	149.0									00030036
	CAP	219.0	220.0	221.0	222.0	224.0	226.0					00030038
	CAP	319.0	320.0	321.0	322.0	324.0	326.0					00030040
	CAP	419.0	420.0	421.0	422.0	424.0	426.0					00030042
	CAP	448.0	449.0	450.0	451.0	452.0	453.0	454.0	455.0	456.0		00030044
	CAP	740.0	741.0	742.0	743.0	744.0	745.0	746.0				00030046
	CAP	749.0										00030048
	CAP	750.0										00030050
	CAP	831.0	832.0	833.0	834.0	835.0	836.0	837.0	838.0	839.0		00030052
	CAP	840.0	841.0	842.0	843.0	844.0	845.0	846.0	847.0	848.0		00030054
	CAP	852.0	853.0	854.0	855.0	856.0	857.0	858.0	859.0	860.0		00030056
	CAP	891.0	892.0	893.0	894.0	895.0	896.0	897.0	898.0	899.0		00030058
	CAP	081.0	082.0	083.0	084.0	085.0	086.0	087.0	088.0	089.0		00030060
	CAP	1001.0	1002.0	1003.0	1004.0	1005.0	1006.0					00030062
	CAP	1011.0	1012.0	1013.0	1014.0	1015.0	1016.0					00030064
	CAP	2022.0	2023.0	2024.0	2025.0	2026.0	2027.0	2028.0	2029.0	2030.0		00030066
	CAP	2040.0	2041.0	2042.0	2043.0	2044.0	2045.0	2046.0	2047.0	2048.0		00030068
ENDNET												00030070
FACTOR	1.											00030072
CAP	11	196.8	12	021.6	13	000.0	14	021.6	15	260.4	16	184.8
CAP	17	174.0	18	037.2	19	036.0	20	074.4	21	046.8	22	046.8

CAP	23	030.0	24	030.0	25	058.8	26	360.0	27	060.0	28	033.6	00030115
CAP	29	033.6	30	037.2	31	025.1	32	034.8	33	034.8	34	100.2	00030120
CAP	35	058.8	36	052.8	37	052.8	38	114.0	40	175.2	44	114.0	00030125
CAP	45	114.0	46	039.6	47	039.6	48	196.0	49	000.0	50	060.0	00030130
CAP	52	024.0	53	176.0	55	084.0	56	048.0	57	122.4	58	300.0	00030135
CAP	63	004.0	64	004.5	66	008.4							00030140
CAP	068	82.80	067	179.6									00030167
CAP	70	368.0	71	358.0									00030170
CAP	181	248.4	182	69.0	183	27.6	184	69.0					00030181
CAP	185	41.4	186	207.0	187	84.0							00030185
FACTOR	1.0	STRUCTURE											
CAP	091	8.08	092	8.75	093	8.75	094	5.95					00031100
CAP	096	11.20	097	11.20	098	11.20							00031101
CAP	101	12.45	102	13.48	103	13.48	104	09.18	105	10.93	106	13.01	00031102
CAP	107	13.01	108	13.01	109	11.75	110	6.350	111	6.350	112	6.350	00031103
CAP	113	18.12	114	18.12	115	18.12	116	18.12	117	18.12	118	18.12	00031107
CAP	123	8.300	125	8.300	127	8.300							00031113
CAP	130	2.500	131	78.50	132	78.50	133	78.50	134	79.50	135	78.50	00031123
CAP	136	78.50											00031130
CAP	191	5.24	192	6.67	193	6.67	194	3.33					00031136
CAP	201	15.20	202	16.50	203	16.50	204	11.20	205	8.100	206	9.600	00031191
CAP	207	9.600	208	9.600	209	8.710	210	5.950	211	5.950	212	5.950	00031201
CAP	213	17.00	214	17.00	215	17.00	216	17.00	217	17.00	218	17.00	00031207
CAP	223	7.750	225	7.750	227	7.750							00031213
CAP	291	10.48	292	13.33	293	13.33	294	6.67					00031223
CAP	301	16.60	302	18.00	303	18.00	304	12.30	305	8.850	306	10.50	00031291
CAP	301	10.50	308	10.50	309	9.540	310	6.500	311	6.500	312	6.500	00031301
CAP	313	18.60	314	18.60	315	18.60	316	18.60	317	18.60	318	18.60	00031307
CAP	323	8.500	325	8.500	327	8.500							00031313
CAP	391	5.24	392	6.67	393	6.67	394	3.33					00031323
CAP	401	21.69	402	23.48	403	23.48	404	15.99	405	11.20	406	16.10	00031391
CAP	407	16.10	408	16.10	409	14.60	410	9.950	411	9.950	412	9.950	00031401
CAP	413	28.40	414	28.40	415	28.40	416	28.40	417	28.40	418	28.40	00031407
CAP	423	13.00	425	13.00	427	13.00							00031413
CAP	430	41.00	431	95.00	432	95.00	433	63.50	434	63.50	435	95.00	00031423
CAP	436	95.00											00031430
CAP	437	13.50	447	13.50									00031436
CAP	491	3.81	492	4.12	493	4.12	494	2.81					00031437
CAP	501	28.50	502	30.80	503	30.80	504	21.00	505	11.10			00031491
CAP	508	11.10	509	11.10	510	11.10	511	11.10	512	11.10			00031501
FACTOR	1.0	DNA-002-1 AND -2											
CAP	601	43.2	602	18.5	611	43.2	612	18.5					00031600
FACTOR	605	RM 20R SENSOR											

UVR ELEC

UVR SENSOR

CAP	810	1.7470	811	0.9860	812	.39036	813	.50676	814	.38536	815	.1256	00031810
CAP	817	0.0924	820	0.1830	821	0.1800	822	0.5640	823	2.4600	824	1.590	00031817
CAP	830	.0504	845	.025	893	.677							00031830
FACTOR	1.0	RM20B CONDUCTION STRAP											
CAP	900	11.1											00030900
FACTOR	60.	RM-20B COMMAND PROCESSOR UNIT											
CAP	922	0.638	923	0.116	924	0.298	925	0.170	926	0.289			00030922
CAP	927	0.060	928	0.245	929	0.353	930	0.153	931	0.185			00030923
CAP	932	0.160	933	0.160	934	0.271	935	0.245					00030927
FACTOR	60.	TAPE RECORDER											
CAP	950	1.060	951	0.394	952	0.590	953	0.590	954	0.394	955	0.197	00030932
CAP	956	0.209	957	0.087	958	0.116	959	0.209	960	0.087	961	0.116	00030950
CAP	962	.0835											00030951
CAP	963	.0716											00030956
FACTOR	1.0	ZENNER DIODES INCLUDING MTG STRIP											
CAP	981	1.6	982	1.6	983	1.6	984	0.8					00030962
CAP	985	1.6	986	1.6	987	1.6	988	0.8					00030963
CAP	989	1.6	990	1.6	991	1.6	992	0.8					00030980
*CAP	2001	0.18	2002	3.46	2003	0.10	2004	3.92	2005	3.92	2006	0.29	00030981
*	2007	0.29	2008	0.24	2009	0.24	2011	1.78	2012	0.38	2013	0.96	00030985
*	2014	1.12	2015	1.12	2016	1.12	2017	3.68	2018	1.44	2019	1.36	00030989
	2020	1.97	2021	6.58	2050	8.36							00400000
END		CAPACITOR BLOCK											
DEC	2.0	292826											00040002
DEC	3.0	292826											00040003
SAVE	1,100,0.												00040009
DEC	243	1.											00040243
DEC	801	0.											00040801
END		RM 20B DETECTOR HEATER QDOT CONTROL											
VR3		STORAGE BLOCK											
VR3		HOURS TO MINUTES											
VR3	4001,7001,5,1.												00050001
VR6	4243 7001 243 1.												00050005
VR6	4004,313,15,152,1,4002,4005,314,152162,1,4002												00050010
VR6	4006,315,153162,1,4002,4007,316,154162,1,4002												00050012
VR6	4008,317,155162,1,4002												00050014
VR6	4009,318,156163,1,4002,4010,319,157163,1,4002												00050016
VR6	4011,320,158163,1,4002,4012,321,159163,1,4002												00050018
VR6	4013,322,160163,1,4002,4014,323,161163,1,4002												00050020
VR6	4015,363,251262,1,4002,4016,364,252262,1,4002												00050022
VR6	4017,365,253262,1,4002,4018,366,254262,1,4002												00050024
VR6	4019,367,255262,1,4002												00050026
VR6	4020,368,256263,1,4002,4021,369,257263,1,4002												00050028
VR6	4022,370,258263,1,4002,4023,371,259263,1,4002												00050030
VR6	4024,372,260263,1,4002,4025,373,261263,1,4002												00050032

VR6	4026,413,351362,1,4002,4027,414,352362,1,4002	ARRAY HP 3XX	00050034
VR6	4028,415,353362,1,4002,4029,416,354362,1,4002	ARRAY HP 3XX	00050036
VR6	4030,417,355362,1,4002	ARRAY HP 3XX	00050038
VR6	4031,418,356363,1,4002,4032,419,357363,1,4002	RNDY HP 3XX	00050040
VR6	4033,420,358363,1,4002,4034,421,359363,1,4002	RNDY HP 3XX	00050042
VR6	4035,422,360363,1,4002	RNDY HP 3XX	00050044
VR6	4037,463,451462,1,4003,4038,464,452462,1,4003	ARRAY HP 4XX	00050046
VR6	4039,465,453462,1,4003,4040,466,454462,1,4003	ARRAY HP 4XX	00050048
VR6	4041,467,455462,1,4003	ARRAY HP 4XX	00050050
VR6	4042,468,456463,1,4003,4043,469,457463,1,4003	RNDY HP 4XX	00050052
VR6	4044,470,458463,1,4003,4045,471,459463,1,4003	RNDY HP 4XX	00050054
VR6	4046,472,460463,1,4003,4047,473,461463,1,4003	RNDY HP 4XX	00050056
VR6	4048,962,551562,1,4002,4049,963,552562,1,4002	RNDY HP 4XX	00050058
VR6	4050,964,553562,1,4002,4051,965,554562,1,4002		00050060
VR6	4052,966,555562,1,4002		00050062
VR6	4053,967,556563,1,4002,4054,968,557563,1,4002		00050064
VR6	4055,969,558563,1,4002,4056,970,559563,1,4002		00050066
VR6	4057,971,560563,1,4002,4058,972,561563,1,4002		00050068
END			00059999
CURVE 5			00060050
DEC	0,0,0,240,4,4		00060051
CURVE 6	K TG15000		00060060
DEC	-460,0,0005,-300,0,0005,-200,0,0009,-100,0,0015,0,0,0021		00060061
DEC	100,0,0030,200,0,0042,300,0,0058,400,0,0078,500,0,0102		00060062
CURVE 8		ZENER DIODE DISSIPATION - QUIESCENT HOT	00060080
DEC	0,0,69,1,9000,0,69,1		00060081
C	QUIESCENT - HOT		00062000
CURVE 211		TAPE RECORDER NO 3	00062110
DEC	0,0,0,1,0,2,0,0,3,0,0,4,0,0,5,0,0,6,0,0,7,0,0,8,0,0,9,0,0		00062111
DEC	10,0,0,11,0,0,12,0,0,13,0,0,14,0,0,15,0,0,16,0,0,17,0,0		00062112
DEC	18,0,0,19,0,0,20,0,0,21,0,0,22,0,0,23,0,0,24,0,0,25,0,0,900,0,0		00062113
DEC	917,0,0,918,0,0,919,0,0,920,0,0,921,0,0,922,0,0,923,0,0,924,0,0		00062114
CURVE 212			00062120
DEC	0,0,000,0,900,0,000,0		00062121
CURVE 213		BATTERY NO 2	00062130
DEC	0,0,14,4,200,0,14,4		00060131
DEC	901,0,0,902,0,0,903,0,0,904,0,0,905,0,0,906,0,0,907,0,0,908,0,0		00062132
DEC	909,0,0,910,0,0,911,0,0,912,0,0,913,0,0,914,0,0,915,0,0,916,0,0		00062133
DEC	917,0,0,918,0,0,919,0,0,920,0,0,921,0,0,922,0,0,923,0,0,924,0,0		00062134
CURVE 214			00062140
DEC	0,0,000,0,1,000,0,2,000,0,3,000,0,4,000,0,5,000,0,900,0,000,0		00062141
DEC	901,0,0,902,0,0,903,0,0,904,0,0,905,0,0,906,0,0,907,0,0,908,0,0		00062142
DEC	909,0,0,910,0,0,911,0,0,912,0,0,913,0,0,914,0,0,915,0,0,916,0,0		00062143

DEC	917.,0.,918.,0.,919.,0.,920.,0.,921.,0.,922.,0.,923.,0.,924.,0.	00062144
CURVE	215	00062150
DEC	0.,4.00,900.,4.00	00062151
CURVE	216	00062160
DEC	0.,13.0,900.,13.0	00062161
CURVE	217	00062170
DEC	0.,6.0 900.,6.0	00062170
DEC	901.,0.,902.,0.,903.,0.,904.,0.	00062170
CURVE	218	00062170
DEC	0.,000.,900.,000.	00062180
CURVE	219	00062181
DEC	0.,000.,900.,000.	00062190
CURVE	220	00062191
DEC	0.,0.40,900.,0.40	00062200
CURVE	221	00062201
DEC	0.,0.80,900.,0.80	00062210
DEC	901.,0.,902.,0.,903.,0.,904.,0.,905.,0.,906.,0.,907.,0.,908.,0.	00062211
DEC	909.,0.,910.,0.,911.,0.,912.,0.,913.,0.,914.,0.,915.,0.,916.,0.	00062212
CURVE	222	00062213
DEC	0.,0.80,900.,0.80	00062220
CURVE	223	00062221
DEC	0.,1.00,900.,1.00	00062231
DEC	901.,0.,902.,0.,903.,0.,904.,0.,905.,0.,906.,0.,907.,0.,908.,0.	00062232
DEC	909.,0.,910.,0.,911.,0.,912.,0.,913.,0.,914.,0.,915.,0.,916.,0.	00062233
CURVE	224	00062240
DEC	0.,1.00,900.,1.00	00062241
DEC	901.,0.,902.,0.,903.,0.,904.,0.,905.,0.,906.,0.,907.,0.,908.,0.	00062242
DEC	909.,0.,910.,0.,911.,0.,912.,0.,913.,0.,914.,0.,915.,0.,916.,0.	00062243
CURVE	225	00062250
DEC	0.,2.00,900.,2.00	00062251
CURVE	226	00062260
DEC	0.,000.,900.,000.	00062261
CURVE	227	00062270
DEC	0.,000.,900.,000.	00062271
CURVE	228	00062280
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.	00062281
DEC	7.,0.,8.,0.,9.,0.,10.,0.,11.,0.,12.,0.,900.,0.	00062282
CURVE	229	00062290
DEC	0.,000.,900.,000.	00062291
CURVE	230	00062300
DEC	0.,000.,900.,000.	00062301
CURVE	231	00062310
DEC	0.,000.,900.,000.	00062311

CURVE	232		2-WATT X4TR		00062320
DEC		0.,000.,900.,000.			00062321
DEC		901.,0.,902.,0.,903.,0.,904.,0.,905.,0.,906.,0.,907.,0.,908.,0.			00062322
DEC		909.,0.,910.,0.,911.,0.,912.,0.,913.,0.,914.,0.,915.,0.,916.,0.			00062323
CURVE	233		2-WATT X4TR		00062330
DEC		0.,000.,900.,000.			00062331
CURVE	234		COMMAND DISTRIBUTOR		00062340
DEC		0.,0.,10,900.,0.,10			00062341
CURVE	235		RF ASSEMBLY		00062350
DEC		0.,000.,900.,000.			00062351
DEC		901.,0.,902.,0.,903.,0.,904.,0.,905.,0.,906.,0.,907.,0.,908.,0.			00062352
DEC		909.,0.,910.,0.,911.,0.,912.,0.,913.,0.,914.,0.,915.,0.,916.,0.			00062353
CURVE	236		EMI FILTER EPS NO 1		00062360
DEC		0.,000.,900.,000.			00062361
CURVE	237		EMI FILTER EPS NO 2		00062370
DEC		0.,000.,900.,000.			00062371
CURVE	238		PYRO CONTROLLER		00062380
DEC		0.,000.,900.,000.			00062381
CURVE	239		DNA-002-1		00062390
DEC		0.,0.,00,900.,0.,00			00062391
CURVE	240		SCANWHEEL NO 1		00062400
DEC		0.,5.0 900. 5.0	ACCOUNTS FOR EXTERNAL HEAT BALANCE		00062401
DEC		901. 0. 902. 0. 903. 0. 904. 0.			00062402
CURVE	241		UVR ELECTRONICS		00062410
DEC		0.,00.0,900.,00.0			00062411
DEC		901.,0.,902.,0.,903.,0.,904.,0.,905.,0.,906.,0.,907.,0.,908.,0.			00062412
DEC		909.,0.,910.,0.,911.,0.,912.,0.,913.,0.,914.,0.,915.,0.,916.,0.			00062413
DEC		917.,0.,918.,0.,919.,0.,920.,0.,921.,0.,922.,0.,923.,0.,924.,0.			00062414
CURVE	242		UVR SENSOR		00062420
DEC		0.,0.0 .. 0.0 2. 0.0 3. 0.0 4. 0.0 900. 0.0			00062421
CURVE	243		TAPE RECORDER NO 1		00062430
DEC		0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,7.,0.,8.,0.,9.,0.			00062431
DEC		10.,0.,11.,0.,12.,0.,13.,0.,14.,0.,15.,0.,16.,0.,17.,0.			00062432
DEC		18.,0.,19.,0.,20.,0.,21.,0.,22.,0.,23.,0.,24.,0.,25.,0.,900.,0.			00062433
CURVE	244		PCU NO 1		00062440
DEC		0.,21.0,1.,21.0,2.,21.0,3.,21.0,4.,21.0,900.,21.0			00062441
DEC		901.,0.,902.,0.,903.,0.,904.,0.,905.,0.,906.,0.,907.,0.,908.,0.			00062442
DEC		909.,0.,910.,0.,911.,0.,912.,0.,913.,0.,914.,0.,915.,0.,916.,0.			00062443
DEC		917.,0.,918.,0.,919.,0.,920.,0.,921.,0.,922.,0.,923.,0.,924.,0.			00062444
CURVE	245		PCU NO 2		00062450
DEC		0.,21.0,1.,21.0,2.,21.0,3.,21.0,4.,21.0,900.,21.0			00062451
DEC		901.,0.,902.,0.,903.,0.,904.,0.,905.,0.,906.,0.,907.,0.,908.,0.			00062452
DEC		909.,0.,910.,0.,911.,0.,912.,0.,913.,0.,914.,0.,915.,0.,916.,0.			00062453

DEC	317.0.0.918.0.0.919.0.0.920.0.0.921.0.0.922.0.0.923.0.0.924.0.0.	00062454
CURVE	246	00062460
DEC	0.0.1.50.900.0.1.50	00062461
CURVE	247	00062470
DEC	0.0.1.50.900.0.1.50	00062471
CURVE	248	00062480
DEC	0.0.0.1.0.0.2.0.0.3.0.0.4.0.0.5.0.0.6.0.0.7.0.0.8.0.0.9.0.0.	00062481
DEC	10.0.0.11.0.0.12.0.0.13.0.0.14.0.0.15.0.0.16.0.0.17.0.0.	00062482
DEC	18.0.0.19.0.0.20.0.0.21.0.0.22.0.0.23.0.0.24.0.0.25.0.0.900.0.0.	00062483
CURVE	249	00062490
DEC	0.0.14.4.900.0.14.4	00060491
DEC	901.0.0.902.0.0.903.0.0.904.0.0.905.0.0.906.0.0.907.0.0.908.0.0.	00062492
DEC	909.0.0.910.0.0.911.0.0.912.0.0.913.0.0.914.0.0.915.0.0.916.0.0.	00062493
DEC	917.0.0.918.0.0.919.0.0.920.0.0.921.0.0.922.0.0.923.0.0.924.0.0.	00062494
CURVE	250	00062500
DEC	0.0.0.0.0.900.0.0.00	00062501
DEC	901.0.0.902.0.0.903.0.0.904.0.0.905.0.0.906.0.0.907.0.0.908.0.0.	00062502
DEC	909.0.0.910.0.0.911.0.0.912.0.0.913.0.0.914.0.0.915.0.0.916.0.0.	00062503
DEC	917.0.0.918.0.0.919.0.0.920.0.0.921.0.0.922.0.0.923.0.0.924.0.0.	00062504
CURVE	251	00062510
DEC	0.0.0.0.0.900.0.0.00	00062511
DEC	901.0.0.902.0.0.903.0.0.904.0.0.905.0.0.906.0.0.907.0.0.908.0.0.	00062520
DEC	909.0.0.910.0.0.911.0.0.912.0.0.913.0.0.914.0.0.915.0.0.916.0.0.	00062521
DEC	917.0.0.918.0.0.919.0.0.920.0.0.921.0.0.922.0.0.923.0.0.924.0.0.	00062530
CURVE	252	00062531
DEC	0.0.0.0.0.900.0.0.00	00062532
DEC	901.0.0.902.0.0.903.0.0.904.0.0.905.0.0.906.0.0.907.0.0.908.0.0.	00062540
DEC	909.0.0.910.0.0.911.0.0.912.0.0.913.0.0.914.0.0.915.0.0.916.0.0.	00062541
DEC	917.0.0.918.0.0.919.0.0.920.0.0.921.0.0.922.0.0.923.0.0.924.0.0.	00062550
CURVE	253	00062551
DEC	0.0.0.1.0.0.2.0.0.3.0.0.4.0.0.5.0.0.6.0.0.7.0.0.8.0.0.9.0.0.	00062552
DEC	10.0.0.11.0.0.12.0.0.13.0.0.14.0.0.15.0.0.16.0.0.17.0.0.	00062560
CURVE	254	00062561
DEC	0.0.0.0.0.900.0.0.00	00062562
DEC	901.0.0.902.0.0.903.0.0.904.0.0.905.0.0.906.0.0.907.0.0.908.0.0.	00062570
DEC	909.0.0.910.0.0.911.0.0.912.0.0.913.0.0.914.0.0.915.0.0.916.0.0.	00062571
DEC	917.0.0.918.0.0.919.0.0.920.0.0.921.0.0.922.0.0.923.0.0.924.0.0.	00062572
CURVE	255	00062580
DEC	0.0.0.1.0.0.2.0.0.3.0.0.4.0.0.5.0.0.6.0.0.7.0.0.8.0.0.9.0.0.	00062581
DEC	10.0.0.11.0.0.12.0.0.13.0.0.14.0.0.15.0.0.16.0.0.17.0.0.	00062582
CURVE	256	00062583
DEC	0.0.0.1.0.0.2.0.0.3.0.0.4.0.0.5.0.0.6.0.0.7.0.0.8.0.0.9.0.0.	00062590
DEC	10.0.0.11.0.0.12.0.0.13.0.0.14.0.0.15.0.0.16.0.0.17.0.0.	00062591
CURVE	257	
DEC	0.0.0.1.0.0.2.0.0.3.0.0.4.0.0.5.0.0.6.0.0.7.0.0.8.0.0.9.0.0.	
DEC	10.0.0.11.0.0.12.0.0.13.0.0.14.0.0.15.0.0.16.0.0.17.0.0.	
CURVE	258	
DEC	0.0.0.1.0.0.2.0.0.3.0.0.4.0.0.5.0.0.6.0.0.7.0.0.8.0.0.9.0.0.	
DEC	10.0.0.11.0.0.12.0.0.13.0.0.14.0.0.15.0.0.16.0.0.17.0.0.	
CURVE	259	
DEC	0.0.0.0.0.900.0.0.00.	

CURVE	260	DNA-002-2										00062600
DEC	0.,0.00,900.,0.00	CURRENT SENSOR RM-20A										00062601
CURVE	261	CURRENT SENSOR RM-20B										00062610
DEC	0.,0.00,900.,0.00	CURRENT SENSOR BATTERY NO 1										00062611
CURVE	262	CURRENT SENSOR BATTERY NO 2										00062620
DEC	0.,0.00,900.,0.00	CRITICAL BUS										00062621
CURVE	263	CURRENT SENSORS SOLAR ARRAY										00062630
DEC	0.,0.00,900.,0.00	RM20B CPU										00062631
CURVE	264	RM20B CPU										00062640
DEC	0.,0.00,900.,0.00	RM20B CPU										00062641
CURVE	265	RM20B CPU										00062650
DEC	0.,0.00,900.,0.00	RM20B CPU										00062651
CURVE	266	RM20B CPU										00062660
DEC	0.,0.00,900.,0.00	RM20B CPU										00062661
CURVE	92	RM20B CPU										00060920
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,900.,0.	RM20B CPU										00060921
CURVE	93	RM20B CPU										00060930
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,900.,0.	RM20B CPU										00060931
CURVE	94	RM20B CPU										00060940
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,900.,0.	RM20B CPU										00060941
CURVE	95	RM20B CPU										00060950
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,900.,0.	RM20B CPU										00060951
CURVE	96	RM20B CPU										00060960
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,900.,0.	RM20B CPU										00060961
CURVE	97	RM20B CPU										00060970
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,900.,0.	RM20B CPU										00060971
CURVE	98	RM20B CPU										00060980
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,900.,0.	RM20B CPU										00060981
CURVE	280	COMPONENT HEAT DISSIPATION										00062800
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,7.,0.,900.,0.	00062801										
CURVE	800 K - FIBERGLASS SHEET/HEAT TRANSFER ACROSS FIBER	00068000										
DEC	-400.,128.,-350.,160.,-300.,1833,-200.,219	00068001										
CURVE	-100.,250,0.,275,100.,298,200.,317	00068002										
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,900.,0.	00068010										
CURVE	801 K - FIBERGLASS SHEET/HEAT TRANSFER IN DIRECTION OF FIBER	00068011										
DEC	-400.,168.,-300.,227,-200.,270	00068012										
CURVE	0.,343,200.,404	00068020										
DEC	0.,0.,1.,0.,2.,0.,3.,0.,4.,0.,5.,0.,6.,0.,7.,0.,900.,0.	00068021										
CURVE	802 K - ALUMINUM ALLOY (2024) SAE	00068030										
DEC	-400.,75.,-200.,88.,0.,99.,200.,107.,400.,110.	00068031										
CURVE	803 DETECTOR HEATER CONTROLLER	00601100										
DEC	-460.,34.13 -155.8 34.13 -154.0 0. 600. 0.	00601101										
CURVE	11	00601200										
DEC	0.,108.5,900.,108.5											
CURVE	12											

DEC 0.,295.4,900.,295.4
 CURVE 13
 DEC 0.,404.8,900.,404.8
 CURVE 14
 DEC 0.,406.7,900.,406.7
 CURVE 15
 DEC 0.,300.2,900.,300.2
 CURVE 16
 DEC 0.,114.3,900.,114.3
 CURVE 17
 DEC 0.,6.200,900.,6.200
 CURVE 18
 DEC 0.,4.800,900.,4.800
 CURVE 19
 DEC 0.,2.900,900.,2.900
 CURVE 20
 DEC 0.,1.160,900.,1.160
 CURVE 21
 DEC 0.,0.200,900.,0.200
 CURVE 22
 DEC 0.,0.000,900.,0.000
 CURVE 23
 DEC 0.,25.20,900.,25.20
 CURVE 24
 DEC 0.,27.10,900.,27.10
 CURVE 25 +Y
 DEC 0.,418.40,900.,418.40
 CURVE 26 +Z
 DEC 0.,33.260,900.,33.260
 CURVE 27 -Z
 DEC 0.,33.26,900.,33.26
 CURVE 111
 DEC 0.,0.000,900.,0.000
 CURVE 112
 DEC 0.,1.698,900.,1.698
 CURVE 113
 DEC 0.,9.790,900.,9.790
 CURVE 114
 DEC 0.,23.77,900.,23.77
 CURVE 115
 DEC 0.,39.86,900.,39.86
 CURVE 116
 DEC 0.,52.15,900.,52.15

00601201
 00601300
 00601301
 00601400
 00601401
 00601500
 00601501
 00601600
 00601601
 00601700
 00601701
 00601800
 00601801
 00601900
 00601901
 00602000
 00602001
 00602100
 00602101
 00602200
 00602201
 00602300
 00602400
 00602401
 00602500
 00602501
 00602600
 00602601
 00602700
 00602701
 00611100
 00611101
 00611200
 00611201
 00611300
 00611301
 00611400
 00611401
 00611500
 00611501
 00611600
 00611601

CURVE 117
 DEC 0.,52.15,900.,52.15
 CURVE 118
 DEC 0.,39.86,900.,39.86
 CURVE 119
 DEC 0.,23.77,900.,23.77
 CURVE 120
 DEC 0.,9.790,900.,9.790
 CURVE 121
 DEC 0.,1.698,900.,1.698
 CURVE 122
 DEC 0.,0.000,900.,0.000
 CURVE 123
 DEC 0.,7.492,900.,7.492
 CURVE 124
 DEC 0.,27.17,900.,27.17
 CURVE 126
 DEC 0.,52.03 900., 52.03
 END
 PRINTV 11 40
 PRINTV 44 58
 PRINTV 63 68
 PRINTV 70 71
 PRINTV 81 88
 PRINTV 91 98
 PRINTV 101 149
 PRINTV 151 163
 PRINTV 181 187
 PRINTV 191 194
 PRINTV 201 227
 PRINTV 251 263
 PRINTV 291 294
 PRINTV 301 327
 PRINTV 351 363
 PRINTV 391 394
 PRINTV 401 463
 PRINTV 491 494
 PRINTV 501 512
 PRINTV 551 563
 PRINTV 740 746
 PRINTV 749 750
 PRINTV 810 817
 PRINTV 820 825

+Z

CURVE BLOCK

00611700
 00611701
 00611800
 00611801
 00611900
 00611901
 00612000
 00612001
 00612100
 00612101
 00612200
 00612201
 00612300
 00612301
 00612400
 00612401
 00612600
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 00070044
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 00070101
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 00070191
 00070201
 00070251
 00070291
 00070301
 00070351
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 00070401
 00070491
 00070501
 00070551
 00070740
 00070749
 00070810
 00070820

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PRINTV 830 857
PRINTV 886 893
PRINT 1900
PRINTV 922 935
PRINTV 950 963
PRINTV 981 992
PRINTV 1001 1006
PRINTV 1011 1016
PRINT 1601 1602 1611 1612
PRINTV 2001 2009
PRINTV 2011 2023
PRINTV 2031 2043
PRINTV 2045 2047
PRINT 12049 12050 12061 12062
PRINTS 4 58
END
//PSTEP EXEC USER,PGMNO=CRTXFL14
//G.STEPLIB DD DSN=STT231.XF0014.LOAD,DISP=SHR
//G.FT11F001 DD UNIT=SYSNA,DISP=(OLD,DELETE),DSN=66D11
//G.FT12F001 DD UNIT=SYSNA,DISP=(OLD,DELETE),DSN=66D12
/*
00070830
00070886
00070900
00070922
00070950
00070981
00071001
00071011
00071601
00800002
00800004
00800006
00800008
00800010
00074004
00079999

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